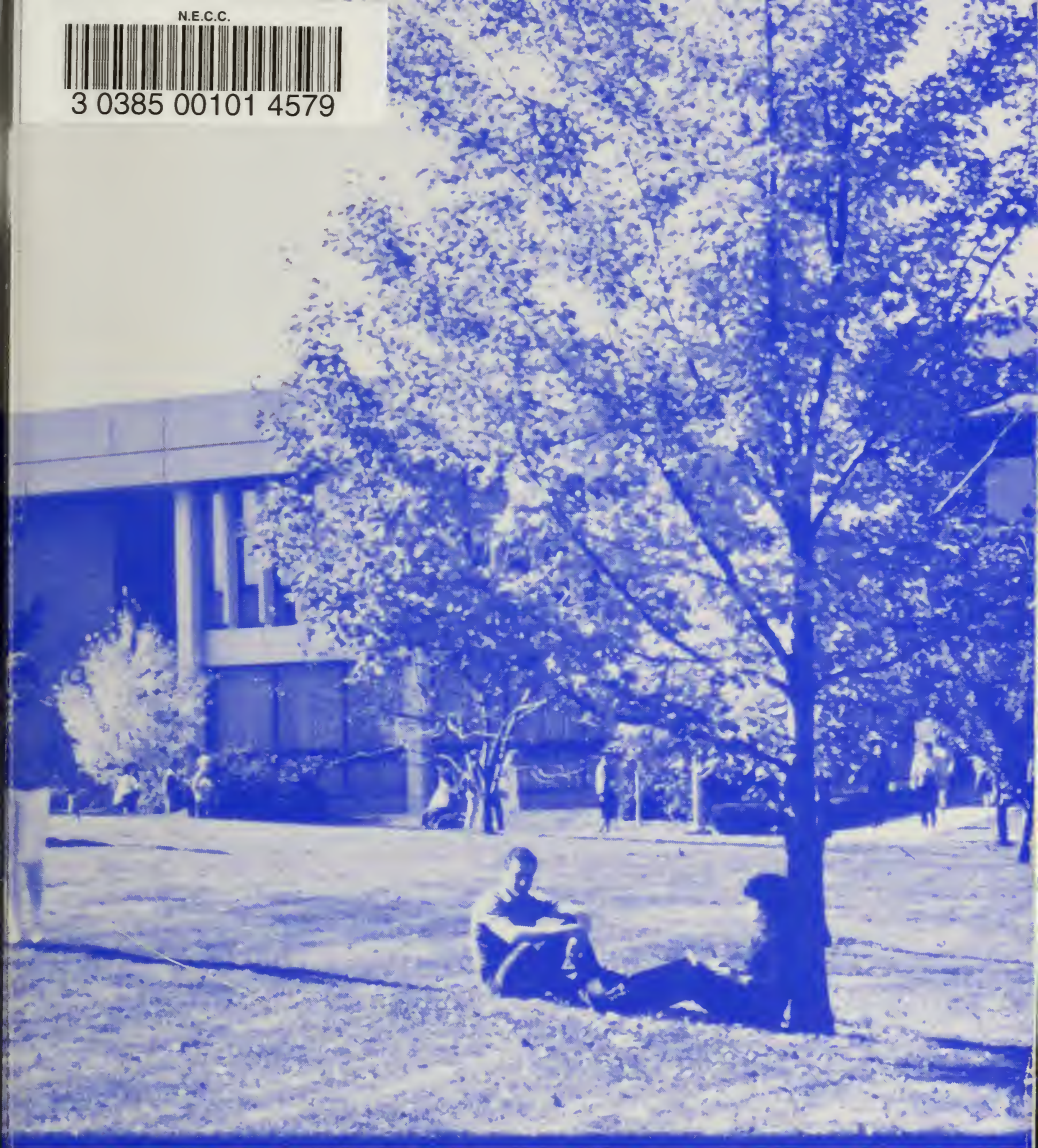


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Reference

NORTHERN ESSEX COMMUNITY COLLEGE

1988/89
CATALOG

Board of Regents of Higher Education Commonwealth of Massachusetts

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Ronald M. Alman of Boston
Mary Lou Anderson of Worcester
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1988-1989
Catalog

Northern Essex Community College



Elliott Way
Haverhill, Massachusetts 01830
Telephone 508-374-3900

College Directory

Main Number

508-374-3900

Office of the President

John R. Dimitry, President

A-Building, 374-3855

Academic Affairs

Robert McDonald, Dean

B-Building, 374-3625

Student Affairs

Norman Landry, Dean

B-Building, 374-3625

Admissions

Elizabeth Huntley Cole, Director

B-Building, 374-3600

Financial Aid

& Special Services

Richard Pastor, Director

B-Building, 374-3650

Registrar's Office

Allen Felisberto, Registrar

B-Building, 374-3700

Continuing Education &

Community Services

John Peroni, Dean

B-Building, 374-3800

Bursar's Office

Regina Correia-Branco, Bursar

B-Building, 374-3903

Cooperative Education & Placement

Abbott Rice, Director

F-Building, 374-3671

Lawrence Campus

Katharine Rodger, Director

Lawrence Public Library, 683-4259

Office for Students with Disabilities

Rubin Russell, Director

F-Building, 374-3654

Student Health Service

Patricia Kepschull, Director

F-Building, 374-3879

Student Activities

Stephen Michaud, Director

F-Building, 374-3731

Academic Support Center

James Ortiz, Director

C-Building, 374-5821

Accreditation

Northern Essex Community College is accredited by the New England Association of Schools and Colleges, Inc., which accredits schools and colleges in the six New England states. Accreditation by the Association indicates that the institution has been carefully evaluated and found to meet standards agreed upon by qualified educators.

Northern Essex supports the efforts of secondary school officials and governing bodies to have their schools achieve regional accredited status to provide reliable assurance of the quality of the education preparation of its applicants for admission.

Table of Contents

Board of Regents and Board of Trustees	inside front cover
Directions to Campus/Campus Map	inside back cover
College Directory/ Accreditation	2
Welcome by the President	5
Introduction	7
General College Policies	10
Admission - anyone can apply!	12
Tuition and Fees	17
Financial Aid	19
Student Life	22
Advising and Counseling	24
Academic Support	28
Specialized Study Opportunities	30
Continuing Education	33
Transfer after NECC	34
Academic Standards	36
Academic Structure	47
Associate Degree Programs/Certificate Programs	47
Course Descriptions	97
Directories	169



Welcome by the President

Since Northern Essex Community College first opened its doors to 181 students in 1961, the college has been committed to two basic principles: opportunity and excellence. This year's enrollment of over 9,600 day and evening students is testimony to the importance of Northern Essex to the people of the Greater Merrimack Valley.

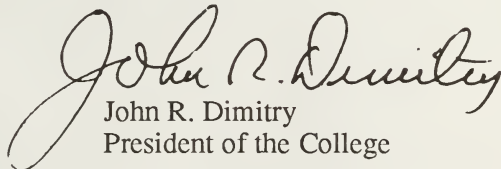
Northern Essex is open to anyone regardless of age, economic status, physical disability or academic background. The more than 500 courses and over 50 academic programs are designed to prepare students to take all the advantages a higher education provides.

Northern Essex provides opportunities for recent high school graduates planning to enroll eventually in a major university (as many of our students do); working men or women interested in career advancement; single parents seeking new jobs; or retirees just interested in taking courses for their own pleasure. Students interested in a teaching career can get a good start at Northern Essex—many of our graduates are employed as teachers in a wide variety of educational settings.

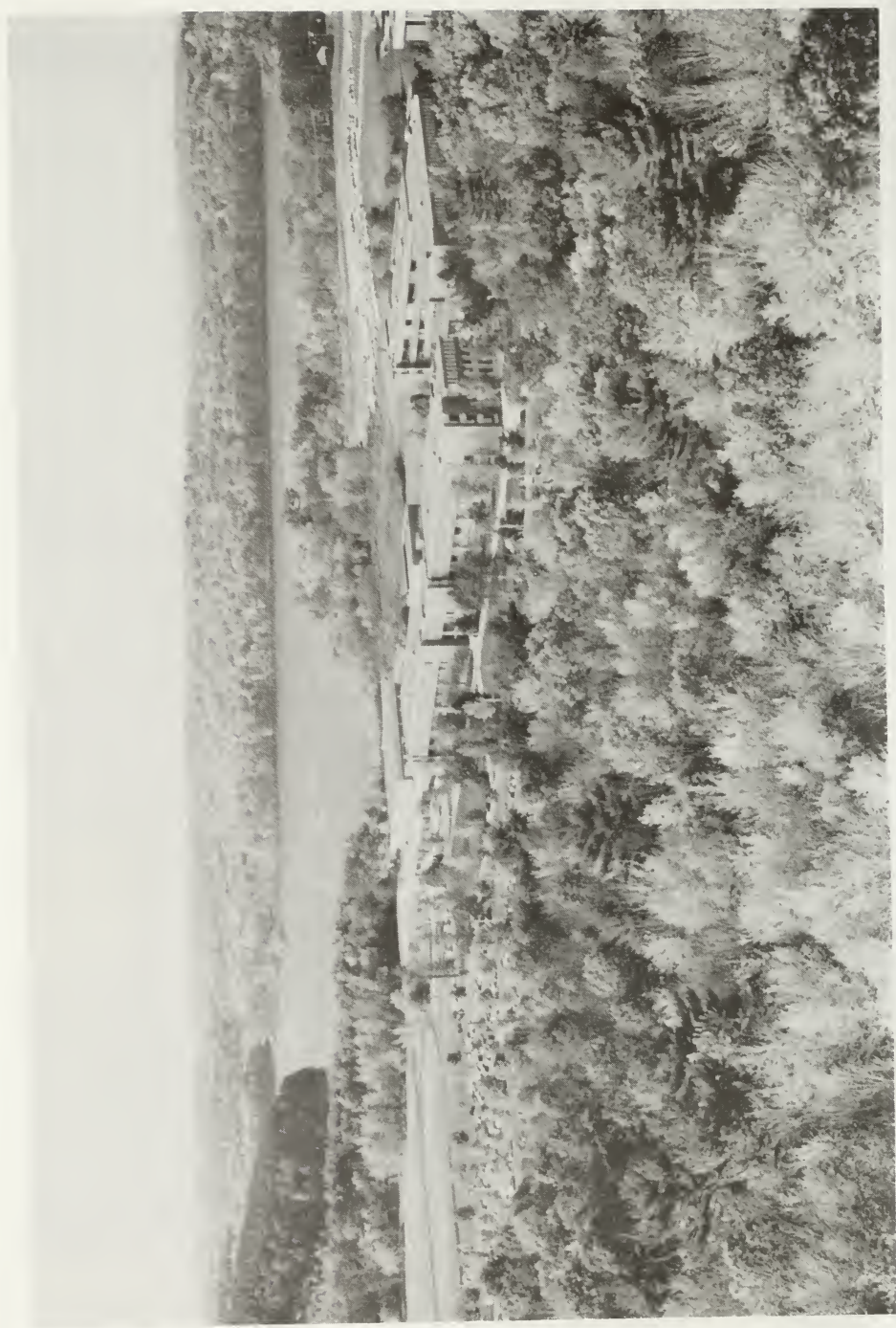
No matter if you attend day or evening, full time or part time, you will find all the college's programs based on a strong commitment to excellence. Our faculty are outstanding teachers who care about individual students and our laboratories and classrooms are among the most modern available.

This catalog will provide you with all the information about Northern Essex you will need to build a fuller and more productive life for yourself and your family. We look forward to providing the academic support and training you need to fulfill your individual goals.

Cordially,

A large, stylized handwritten signature in dark ink, reading "John R. Dimitry". The signature is fluid and cursive, with the first letter of "John" being particularly large and ornate. It is positioned above the printed name and title.

John R. Dimitry
President of the College



Introduction

Northern Essex Community College is justifiably proud of the quality of education and services we offer to our students. Approximately 9,600 students study at Northern Essex either full time or part time. Classes are small and the student/teacher ratio is low. We have a teaching faculty who concentrate their education, experience and effort in the classroom. When your education is completed, you will join the thousands of Northern Essex graduates who have transferred successfully to baccalaureate programs, or become a part of the highly skilled business, industrial or professional work force for which New England is famous.

You will be able to study at Northern Essex at an extremely low cost. The average full time student spends approximately \$500 a semester for tuition and fees. Part time study is comparably inexpensive. A number of financial aid sources are available to eligible students and anyone really interested in a college education can find a way to afford Northern Essex.

Northern Essex is a public, two-year college which offers comprehensive programs of study leading to the Associate in Arts degree, the Associate in Science degree and Certificates of program completion. Excellent facilities, solid academic support services and an active student activity program are part of the educational opportunities at Northern Essex. Flexible scheduling and an opportunity to complete your degree or certificate at your own pace are hallmarks of a Northern Essex education.

Programs specifically for transfer are offered in the Liberal Arts, Business, Engineering Science and Business Education for those students planning to work toward a Bachelor of Arts degree or a Bachelor of Science degree at a four-year institution after graduation from Northern Essex. Our graduates have been consistently successful as transfer students in public and private colleges and universities throughout the country.

Career programs are offered in the arts, business, human services, health professions, the technologies, and office and business education for those students who intend to seek employment upon completion of the associate degree. Career programs, although not designed specifically for transfer, have significant proven transfer potential.

The General Studies program is available to students who have not decided on a particular field of study and want an opportunity to explore their interests and abilities. Northern Essex encourages academic exploration in this and in most programs of study.

Northern Essex is part of the local Merrimack Valley community. The rural main campus borders Kenoza Lake in Haverhill, Massachusetts, and is just one minute from Exit 52 on Interstate Route 495. Northern Essex is minutes away from the Greater Lawrence and Greater Newburyport areas, and less than thirty minutes from the City of Lowell. Extension campuses are located in Andover, Dracut, Lawrence, Reading and Newburyport. Our location means easy commuting, minimum disturbance of home and job schedules, and avoidance of expensive dormitory and food plan costs. Our location means that we are in close touch with what is going on in the Merrimack Valley—we are in touch with the kinds of academic programs people want to study, the skills training the community needs, and where career opportunities for our graduates are located.

Philosophy of the College

Northern Essex Community College is committed to the belief that high quality, low cost education should and can be available to everyone in the community. People of all ages and backgrounds are welcome to utilize the educational opportunities offered.

Northern Essex seeks out potential students who may not be aware of the educational possibilities around them. Age, ethnic or religious background, or past academic records are not prohibitive factors to admission. The college encourages people to consider education throughout their lives.

To implement these ideals, the college has developed and is continuing to expand a wide variety of flexible programs to meet diverse community needs. The college attempts in its programming to reflect directly the interests of business, culture, health and industry in the Merrimack Valley area.

Goals of the College

The Northern Essex community includes more than forty-five cities and towns in the Merrimack Valley, as well as localities in nearby southern New Hampshire. The essential mission of Northern Essex Community College is represented in the following goals which the college strives to realize:

- To provide a climate in which students can develop their potential and their intellectual, physical and social values and skills.
- To provide responsive, high quality education for the citizens of the area.
- To provide career programming for students which prepares them for employment.
- To provide quality lower division programming for those students who are interested in transferring to upper division institutions.
- To provide curriculum flexibility for those students who are unsure of their ultimate career objectives.
- To foster a variety of teaching methods and subjects in order to provide the individual student with sufficient flexibility to adapt rapidly to a broad range of societal changes.
- To provide a full range of appropriate and supportive student services.
- To identify and serve specific segments of the population in our service area that may require specific programming approaches appropriate to community colleges, especially those who have been traditionally underrepresented in postsecondary education.
- To share actively in the cultural life of the community and to exercise leadership in a wide variety of cultural activities.
- To promote excellent teaching by the faculty; to encourage the scholarly and professional growth of the faculty and staff.
- To maintain an effective participatory governance system for the college.
- To broaden the international and intercultural dimension of education at Northern Essex.
- To continue the development of interaction with area businesses, industries, institutions and service agencies in order to maintain and develop relevant curricula and services.
- To foster successful career choices and job performance by promoting cooperative education experiences for all interested students in a wide variety of employment settings.
- To facilitate life-long learning and other community activities by functioning as an accessible and responsive resource center for the region.
- To foster a sense of institutional identity and solidarity and to promote an educational dialogue among students, faculty, administration and governing and advisory boards.
- To encourage experimentation and innovation in educational practices and policies.

Student Body

Approximately 9,600 students are currently enrolled in Northern Essex. About 3,900 students are enrolled each semester in the college's Day Division. Over 5,700 students register each semester in the Division of Continuing Education & Community Services.

Our student body is a complex group. Many come here directly after high school, often from

the top 15% of their class. Others bring a variety of living and job experiences to their studies. The average age of our students ranges from 21 in the Day Division to approximately 31 in the Division of Continuing Education & Community Services.

Some are taking traditional college programs, planning to transfer to a four-year institution after graduation. Some are enrolled in associate degree or certificate programs leading to immediate employment in specialized career fields. Some are taking remedial and developmental courses to upgrade their academic backgrounds while pursuing a degree program. Others are taking individual courses, exploring alternatives before making more formal academic decisions. Some students take special interest courses only. A large number of students are enrolled in non-traditional programs of study such as developmental courses, and training programs in special skills areas and high technology designed to fit the unique training needs of individual groups of students or particular employers.

Governance of the College

In conformance with Chapter 15-A of the Laws of the Commonwealth, jurisdiction over Northern Essex Community College is shared by a local Board of Trustees and a central Board of Regents which governs all segments of public higher education in Massachusetts. The Boards, in turn, delegate responsibility for administration of the college to the President. The President solicits advice in the decision making process from a number of sources, including a college-wide Academic Council, as well as numerous programmatic advisory councils and commissions comprised of representatives from area businesses, industries, unions, social agencies, and educational, public and private institutions in the Merrimack Valley.

Center for Business and Industry

The Center for Business and Industry at Northern Essex is a comprehensive regional resource responsive to skill training and other needs of Merrimack Valley business and industry. The Center plans and implements training programs and adjusts and refines curricula to meet the unique training requirements of individual businesses or institutions. The scope of Center activities is broad, including workshops, conferences and consultant services in addition to classroom training formats. All activities can be scheduled at the main or satellite campuses of the college, at the work-site, or at some convenient alternative location. Through the Center, the college is able to contribute directly and effectively to the economic vitality of the community.

Extension Campuses

Northern Essex maintains extension campuses in Andover, Dracut, Lawrence, Reading and Newburyport. Credit and non-credit courses and special programs are conveniently located at extension sites.

The NECC Foundation

The Northern Essex Community College Foundation is a non-profit organization established by members of the community to provide support for the goals of the college and to expand opportunities available at the college. Incorporated in 1972, the Foundation provides scholarships, cultural events, and education and community services not ordinarily available to the college community. It is the aim of the Northern Essex Community College Foundation to grow and develop into a truly significant contributor to the educational and cultural life of the college.

Gallaudet University Regional Center for New England, New York and New Jersey

Northern Essex is the home of the Gallaudet University Center for New England, New York and New Jersey. The Center implements a program of services to meet the academic, social, cultural and economic needs of hearing-impaired persons in the service area. The Center also disseminates information on deafness and on grants relating to deafness to appropriate agencies and individuals, and serves as a resource for persons or agencies involved in services for deaf persons.

NECC Alumni Association

The Northern Essex Community College Alumni Association was founded in 1971 to promote the interests of Northern Essex and its alumni in the community, and to foster an on-going relationship between the college and its graduates. The Alumni Association elects one of its members to sit on the college's Board of Trustees; another graduate is appointed by the Governor.

General College Policies

Affirmative Action/Accessibility

Northern Essex Community College complies with the requirements of Title IX of the Higher Education Act of 1972 and with the Viet Nam Era Readjustment Assistance Act of 1974. Recruitment, admission, programs, activities and facilities are available to all on a non-discriminatory basis, without regard to race, color, national or ethnic origin, religion, sex, marital or parental status or handicap. The college is an equal opportunity/affirmative action employer. Northern Essex is physically accessible to all people, including those who use wheelchairs. All programs and activities are accessible to all otherwise-qualified students with disabilities. The college complies with the requirements and spirit of Section 504 of the Rehabilitation Act.

Inquiries regarding affirmative action and accessible policies should be addressed to the Affirmative Action/Equal Opportunity Officer and/or the Section 504 Compliance Officer, Northern Essex Community College, Haverhill, MA 01830.

Privacy Act Information

The Family Educational Rights and Privacy Act of 1974, as amended, insures confidentiality of educational records and prescribes the conditions under which information about students can be released to the student, parents or guardians, and authorized third parties. In addition, the Act defines the general record keeping requirements that the institution must maintain to insure accuracy and access of student educational data. The general Provisions of the Act are basic to the following guidelines.

- Students have the right to inspect their academic record (transcript) and student file, and request corrections to data that they believe to be in error or challenge the contents of their student record. The student academic record and file includes all information as of the date of application.
- Students have the right to obtain copies of their academic records, must do so in writing, and may be charged for copies. The institution is not obligated to provide original source documents from other institutions but will provide certified copies upon request.
- Students' parent(s) or legal guardian(s) have the right to access and copies of their children's academic transcript and record only if the child is less than 18 years of age, or they can document that the child is a legal dependent (based on I.R.S. guidelines).
- The institution may refuse to provide transcripts for such reasons as nonpayment of financial obligation of debt owed the college, but students still retain the right to inspect their records.
- The institution may disclose academic and Directory Information to authorized individuals within the institution such as the student's faculty advisor, Division or Department Chairperson, Program Coordinator, Deans, Student Services officers, school Nurse, and to any third party as authorized by the Act.
- Directory Information is defined as the student's current and previous name, mailing address and telephone number, date and place of birth, major field of study, participation in officially recognized activities and sports, weight and height of members of athletic teams, dates of attendance, degrees and awards received, position and salary if employed by the college, and

the most recent previous educational institution attended by the student.

- A student has the right to restrict release of Directory Information in whole or part to certain parties, and must submit a request in writing to the Registrar within five days of the start of each semester or session.

Additional information about this Act, the specific policies of this institution, and students' rights may be obtained by contacting the Student Information Officer, Allen A. Felisberto, Registrar, c/o Northern Essex Community College, Elliott Way, Haverhill, MA 01830, telephone 508-374-3700.

Financial Obligations to the College

Students are expected to fulfill the terms of any financial obligation they make to the college, and pay all of their tuition and fees bills by the posted dates. Failure to do so may result in registration (classes) being cancelled with no guarantee of reinstatement into the same classes, and/or the College's right to prevent students or other third parties from obtaining copies of their academic record and transcript until such time that their financial obligation is fulfilled. Contact the Registrar's Office or Bursar's Office if there are any questions about this subject.

Change of Address

Students who change their mailing address or telephone number should notify the Admissions Office or Registrar's Office in writing, so that their academic records may be updated.

Northern Essex Community College reserves the right to withdraw or revise any provision or requirement described in the college catalog. Supplements to this document may be issued from time to time to present new or additional information.

Admission – anyone can apply!

We encourage everyone to consider NECC. Almost everyone can benefit from a college education or career preparation. We want to give you that opportunity. Traditionally, people think of a college as an educational resource for recent high school graduates. This is true. However, Northern Essex Community College is much, much more.

- Students may enroll in a traditional transfer program and further their study at a four-year college after earning an associate degree. This allows completion of part of a student's education at a relatively low cost, and students enjoy the benefits of a dedicated teaching faculty.
- Students may enroll in an associate degree program leading to a job and career after graduation.
- Students may choose one of the job-oriented certificate programs to develop or upgrade a skill as quickly as possible.
- Students may study at their own pace, on a full- or part-time basis, days or evenings.
- Students may take one or more courses to explore a field of study or enrich their leisure time.
- Students may complete their GED at NECC.

Getting to Know Northern Essex

We encourage prospective students to talk with our current students and our graduates. They are pleased with their choice of college. Such satisfied students are our best recommendation – our ambassadors.

Campus visits are encouraged. Northern Essex is readily accessible to everyone in the Merrimack Valley, and we invite the public to take a first-hand look at us. Campus tours are available, and the Admissions Office and Continuing Education Office staff members are ready to answer questions or refer prospective student to a staff member who will assist with making initial education decisions.

Application

Northern Essex Community College accepts without discrimination all applicants meeting admission requirements for an associate degree or certificate program. Some programs require a specific academic background for admission, others have enrollment limits. Please refer to program requirements.

Usually, applicants for an associate degree program are high school graduates or equivalent. This requirement may be waived for older applicants who show other evidence of their ability to benefit from college work. Scholastic Aptitude Test (SAT) scores are not required for admission.

Northern Essex has rolling admissions. Applications are processed as they are received. Acceptance letters are usually mailed within four weeks of receipt of a completed application. Students may start most degree programs in the fall, spring or summer session. Obtain an application form from the Admissions Office. Return the completed form to the Admissions Office and request the high school and any college attended to forward to the Admissions Office an official transcript of grades.

Application/Registration: Individual Courses

Northern Essex provides a comprehensive educational program with a central focus on the learning and interest needs of adults. Credit courses are offered to students interested in part time study by the Day Division and the Division of Continuing Education & Community Services. Non-credit special interest courses are available in the Division of Continuing Education & Community Services only.

Application/registration for individual credit courses offered by the Day Division may be completed by mail or in person in a one-step procedure. Tuition and fees calculated at Day part time student rates are payable at registration. Registration periods are scheduled each semester. This simplified one-step procedure is especially designed to save time for the busy adult learner. When possible, part-time adult students are encouraged to take advantage of the assessment/ placement testing opportunities prior to registration for classes.

Registration for credit and non-credit courses offered by the Division of Continuing Education & Community Services is completed by mail or in person. There are no requirements for registration and application is not required. Tuition and fees calculated at Division of Continuing Education & Community Services rates are payable at registration. Registration periods are scheduled each semester for mid-semester mini-sessions and for summer session.

Classes are held at the Haverhill and Lawrence campuses and at extension campuses in Andover, Dracut, Reading and Newburyport.

All part time students are encouraged to consider the advantages of formal application/ matriculation in a degree or certificate program as early as possible in their academic careers. Early matriculation assures that all of the courses taken are appropriate to the field of study selected. Requirements for admission must be met, except where special circumstances warrant waivers, at the time of admission. Comprehensive advising and academic assessment services are available for students.

For Further Information

All inquiries, requests for forms or other materials, or questions pertaining to application, admission and registration in the Day Division should be sent to the Admissions Office, Northern Essex Community College, Elliott Way, Haverhill, MA 01830-2397. Or, call the Admissions Office. The number is 508-374-3600. The office is open Monday – Thursday, 8 am to 8 pm and on Friday, 8 am to 4:30 pm.

All inquiries, requests for forms or questions pertaining to registration, matriculation and special interest courses in the Division of Continuing Education & Community Services should be sent to the Continuing Education Office, Northern Essex Community College, Elliott Way, Haverhill, MA 01830-2397. Or, call the Continuing Education Office. The number is 508-374-3800. The Continuing Education office is open Monday–Thursday, 8 am to 8:30 pm; Friday, 8 am to 5 pm; and Saturday, 8 am to 2 pm.

Applicants with Disabilities

No pre-admissions disclosure is required for applicants with disabilities. Students with disabilities should notify the staff in the Admissions office or the Office of Students with Disabilities of any condition which would require additional assistance in completing their academic program.

Admission for High School Students

Students may take courses at Northern Essex for credit (on a full time or part time basis) while still in high school as participants in the College Experience for High School Seniors Program or the Advantage Program. For more information, call the Admission Office. The number is 508-374-3600.

Foreign Students

Northern Essex Community College may accept a limited number of foreign students each year. Foreign students whose native language is other than English will be required to take an English Language Evaluation Test at the Assessment Center at the Haverhill campus, Room C-201 in the Liberal Arts Building (the number is 508-374-5814), or at the Lawrence campus in the Lawrence Public Library, 51 Lawrence Street. The number is 508-683-4259. The following are required at the time of application:

- High School Transcript: all courses completed in high school should be listed. The transcript

must be translated into English and certified as an accurate translation of the original document.

- College Transcript: if applicable and translated into English and certified as an accurate translation of the original document.
- English Language Evaluation Placement Results: those applicants whose test results are unsatisfactory for direct entry to a degree program will be required to complete course work in the English language. Successful completion of these courses will allow students to continue in a degree program.
- Sponsor: Foreign student applicants must have a sponsor in the local area who is a U.S. citizen or registered immigrant.
- Certification of Support: in the amount of approximately \$14,000 annually in a U.S. bank.

Transfer Credit

Transfer credit may be awarded for a course earned with a grade of C or better at another accredited institution when the course is applicable to the Northern Essex curriculum in which the student is enrolled. Credit earned at other than accredited institutions will be evaluated on an individual basis. The Director of Admissions will evaluate all credit from other institutions. A grade given for a course transferred from another college is not computed in the QPA at Northern Essex Community College. If credit is to be transferred from one Northern Essex Community College program of study to another, the transfer credit will be evaluated by the Registrar.

Credit at Northern Essex may be granted for courses which have previously been counted toward a degree which an individual has been granted (whether baccalaureate or associate degree) provided the courses previously taken are applicable to the Northern Essex curriculum in which the student is currently enrolled.

Transfer credit for course work completed in another country is not evaluated at Northern Essex. For information on where foreign transcripts may be evaluated, call the Admissions Office. The number is 508-374-3600.

Advanced Placement

Students who take Advanced Placement courses and an Advanced Placement Test of the College Entrance Examination Board in secondary school may be awarded advanced placement and credit at the college. Credit is granted on the basis of a three or better score on the Advanced Placement Test.

Cooperative Venture in Advanced Placement

Northern Essex Community College and Greater Lawrence Technical School have entered into an agreement whereby students in specific programs at the high school may be admitted with advanced standing to specific programs at Northern Essex. For more information, contact the Coordinator of the appropriate technology program at Northern Essex, or speak with the Chairperson of the Department of Electronic Science at Greater Lawrence Technical School.

CLEP Credit

Northern Essex Community College awards credit in certain predetermined areas as measured by the College Level Examination Program (CLEP). CLEP information is available in the college's Academic Support Center (the telephone number is 508-374-5814). Students should submit CLEP transcripts to the Admissions Office for evaluation of CLEP credit. Northern Essex will award the following CLEP examination credits earned by the achievement of the required score:

General Examinations

CLEP Exam	Credits	Semesters	Score Needed
English Composition (Comp I & II)*	6	2	421
Mathematics	6	2	421
Humanities	6	2	421
Natural Sciences	6	2	421
Social Sciences and History	6	2	421

*Northern Essex accepts only Composition with Essay given January, April, June and October.

Test dates are given in the CLEP Bulletin. Northern Essex administers these tests on Fridays, 8:45 am, of the scheduled week. Tests are not given in December and February. Testing is by appointment only and applications will be accepted no later than 10 working days prior to the test week.

General and subject examinations may also be taken at Lowell University (508-452-5000), North Shore Community College (508-927-4850), and the University of New Hampshire, Durham (603-862-2090).

Subject Examinations

CLEP Exam	NECC Equivalent	Credits	Semester	Score Needed
Intro Accounting	AC6601/6602 Intro Accounting I/II	8	2	47
American Government	GV3313 Federal Government	3	1	47
American History I: Early Colonization /1877	HI9913 U.S. History I	3	1	45
American History II: 1865 to the present	HI9914 U.S. History II	3	1	45
Biology, General	BI5511/BI5514 Introductory Botany and Zoology	8	2	46
Intro Business Law	LW6651 Business Law	3	1	51
Chemistry, General	CH5501/CH5502 General Chemistry I & II	8	2	47
College Algebra & Trigonometry	MA5621 College Algebra & Trigonometry	4	1	45
College French Level 1	FR4401/FR4402 Intro French I & II	6	2	41
Level 2	FR4451/FR4452 Intermediate French I & II	12	4	53
College German Level 1	GM4401/GM4402 Intro German I & II	6	2	40
Level 2	GM4451/GM4452 Intermediate German I & II	12	4	48
College Spanish-Levels 1 /2-2nd Semester	SP4401/SP4402 Introductory Spanish I & II	6	2	41
4th Semester	SP4451/SP4452 Intermediate Spanish I & II	12	4	50
Computer and Data Processing	CT6631 Introduction to Data Processing	3	1	47
Educational Psychology	PS1153 Educational Psychology	3	1	46
Human Growth & Devel.	PS1203 Developmental Psychology	3	1	45
Intro Macro-Economics	EC3323 Macro-Economics	3	1	48
Intro Micro-Economics	MC3322 Micro-Economics	3	1	47
Intro Management	MG6666 Principles of Management	3	1	47
Intro Marketing	MK6678 Principles of Marketing	3	1	48

CLEP Exam	NECC Equivalent	Credits	Semester	Score Needed
General Psychology	PS1101 Introductory Psychology	3	1	47
Intro Sociology	SO3320 Introductory Sociology	3	1	47
Western Civilization I:				
Ancient Near East 1648	HI9901 Western Civilization I	3	1	46
Western Civilization II:				
1648 to the Present	HI9902 Western Civilization II	3	1	47

Credit for Life Learning

The Credit for Life Learning Policy provides the opportunity to award college credit to students who demonstrate that their knowledge and skills are equivalent to those gained in a course or courses offered by the college.

Students interested in credit for life learning should contact the Registrar's Office for the appropriate forms. The process for obtaining credit for life learning is individualized and may include a challenge examination, one or more personal interviews, preparation of a portfolio, and other detailed evidence that students know those things, or possess the skills, offered in a course for which Northern Essex Community College grants credit.

When the general requirements (and those requirements of the particular department involved in the process) are completed, a decision concerning the awarding of credit for life learning will be forwarded to the student and to the Registrar's Office by the Committee on Credit for Life Learning. The Registrar will enter the credit awarded on the student's permanent record indicating that the credit has been awarded and that it has been earned by the Credit for Life Learning process.

Credit earned through this process may be applied toward graduation. However, it is the policy of this college that 24 credits toward graduation must be earned at Northern Essex. Credit for Life Learning may not be substituted for these 24 credits. Any student in a one-year certificate program must earn at least 12 credits in classroom activity at Northern Essex Community College.

Withdrawing from the College

In order to prevent WF (Withdrawn Failure) grades being assigned automatically, a student must complete the appropriate forms if it becomes necessary to withdraw from the college. Information is available in the Admissions Office or the Registrar's Office. Students are encouraged to meet with a member of the Admissions staff at the time of withdrawal to discuss the steps necessary to facilitate enrollment at the college at a later date. For information, students may call the Admissions Office at any time to discuss their interest in returning to Northern Essex. The number is 508-374-3600.

Readmission to the College

Students who, for any reason, do not continue to take courses at Northern Essex must apply for readmission to the college. If they choose to return to the program in which they were formerly matriculated, they must make application for readmission to the program following the procedures of the Admissions Office.

Tuition and Fees

The Board of Regents of Higher Education of the Commonwealth of Massachusetts establishes the mandatory tuition rates; the local Board of Trustees authorizes the discretionary fee schedules for Northern Essex Community College. *All tuition and fees are subject to periodic change.* At the present time, Northern Essex limits tuition and fee charges according to the following schedule (there is no application fee).

Day Division Tuition

Tuition – Massachusetts Residents	
... Per semester – full-time students (12 credits or more)	\$384.00
... Per credit hour – part-time students (11 credits or less)	32.00
Tuition–New England Regional Program Students	
... Per semester–full-time students (12 credits or more)	\$480.00
... Per credit hours – part-time students (11 credits or less)	\$40.00

Note: The rate for non-resident students enrolled in the New England Regional Student Program represents the resident tuition plus a 25% surcharge. Check the Index for further information on this program.

Tuition – Non-Residents/Foreign Students (F-1 Visa) living with immediate family	
... Per semester – full-time students (12 credits or more)	\$1344.00
... Per credit hours part-time students (11 credits or less)	\$112.00

Tuition–Foreign Students (F-1 Visa) *not* living with immediate family

Pursuant to Massachusetts General Laws, Chapter 15A, section 5A, the Chancellor is authorized to set tuition charges based upon true education costs, to be determined upon enactment of the annual budget. Contact the Bursar’s Office for further information.

Note: All foreign students (F-1 Visa) are required to carry the Extended Medical Benefits Plan offered through the college, in addition to the Compulsory Accident Insurance required of all students registered in the college’s Day Division.

Day Division Fees

College Fee–per credit hour	\$11.00
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Note: This fee includes an Institutional Fee (\$8.00 per credit) and a Student Activities Fee (\$3.00 per credit). All students registered in the Day Division are required to pay this combination fee. This fee is refundable only if withdrawal/course drop is made prior to the official opening day of the semester.

Compulsory Accident Insurance (per academic year)	\$15.00
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Note: Extended Medical Benefits Plan available. For information on rates, contact the Bursar’s Office.

Malpractice Insurance Fee (for courses requiring this coverage)	\$13.50
Graduation Fee (non-refundable)	\$25.00
Transcript Fee	\$1.00

Day Division Refund Policy

Any refund of tuition and fees is based upon the date of official, written withdrawal from the college. Complete withdrawal from college, if occurring prior to the start of the semester, will result in a complete refund, including all fees, except for a \$35.00 seat deposit. Complete withdrawal from college on or after the first day of the semester will result in a forfeiture of all fees plus the \$35.00 seat deposit; a refund of tuition only will be calculated according to the following schedule:

- 90% refund of tuition only if withdrawal is made during the first week of classes
 - 70% refund of tuition only if withdrawal is made during the second week of classes
 - 50% refund of tuition only if withdrawal is made during the third or fourth week of classes
- Students whose course load drops below twelve credits will be given a refund of tuition and fees based upon the Day Division refund policy; that is, no fees refunded if drops are made on or after the first date of the semester and tuition only after that date.

Division of Continuing Education & Community Services

Tuition	
Tuition – credit courses (per credit hour)	\$60.00
Tuition – Nursing courses (per credit hour)	\$128.00
Tuition – non-credit courses (based on contact hours)	varies

Division of Continuing Education & Community Services

Fees	
Materials Fee (non-credit courses where applicable)	varies
Malpractice Insurance Fee (for courses requiring this coverage)	\$13.50

Note: Continuing Education students are eligible for the Extended Medical Benefits insurance plan. For information on rates, contact the Bursar's Office.

Graduation Fee (non-refundable)	\$25.00
Transcript Fee	\$1.00

Division of Continuing Education & Community Services

Refund Policy

Tuition is refunded according to the following policy developed by the Massachusetts Board of Regents of Higher Education:

100% refund of tuition and materials fees will be granted for courses which are dropped prior to the first class. There will be no refund of materials fees for courses dropped after the first class.

50% refund of *tuition only* for courses dropped before the third class. No refund will be issued after the start of the third class.

Note: Consult the Bursar's Office for the Evening Nursing refund schedule.

Audit of Classes

The cost to audit credit courses in the Day Division and in the Division of Continuing Education & Community Services is the same rate as listed above. To audit a course, obtain a Permission to Audit form at the Registrar's Office.

Residency

To be eligible for the in-state tuition rate within the Day Division, students must be residents of Massachusetts. In general, one is considered a Massachusetts resident if one has been in continuous residence in Massachusetts for *six months* immediately prior to the date of application to the college and has established a domicile in Massachusetts.

There is no residency requirement for students in the Division of Continuing Education & Community Services.

Information for New England Regional Students

Students who are legal residents of any New England State may be eligible for consideration under the New England Regional Student Program (NERSP). Such students may take advantage of a reduced tuition charge. A student accepted under this program pays the Massachusetts resident tuition rate plus a 25% surcharge fee. Potential students may be eligible for consideration if a study program is not offered at an in-state institution or if Northern Essex Community

College is closer to the student's legal residence than an in-state institution.

Tuition-Free Study

Every student aged 60 or older may take courses at the college tuition-free on a seat-available basis (students are responsible for payment of all fees).

Charge-A-Course (MasterCard/VISA)

Students may charge tuition and fees for courses taken at Northern Essex Community College.

Non-Payment Policy

It is the policy of the Board of Regents of Higher Education that students or former students who are listed by the Bursar's Office as having unpaid debts for tuition or other college-related charges, where said debts have not been discharged by operation of law or where deferred payment of said debts has not been agreed to by said college will not (1) be issued any diploma to which said students might otherwise be entitled; (2) be permitted to register for any program at any state college for which said students might otherwise be eligible; and (3) be furnished a certified copy of any state college transcript, although said students will be entitled, upon written request, to inspect and review uncertified copies of their transcripts.

Financial Aid

The purpose of the Financial Aid Office is to provide information about financial assistance programs for those students who would otherwise be unable to attend college because of economic limitations. Based on an individual's financial need, the Financial Aid Office allocates funds to assist eligible students in paying for the cost of their college education. Assistance is provided through several sources and a student may receive a combination of more than one type of aid. The amount and type of financial aid a student receives is subject to the allocation levels of the various aid programs and is governed by federal, state and college regulations.

Applying for NECC Financial Aid

To apply for any financial aid funds awarded by NECC, a student must submit a Financial Aid Form (FAF), NECC Financial Aid Verification Worksheet, and all appropriate income verification documentation. Applications are available year-round; however, due to limited funding, students are urged to apply early. Applications filed prior to April 15 for Fall semester will receive priority. Students applying for aid for the first time for the Spring semester should complete the application process prior to November 1. The absolute deadline for application for a Pell Grant for a current academic year is May 1.

Satisfactory Academic Progress

The United States Department of Education has established regulations regarding satisfactory academic progress for use in the awarding of student financial assistance. These regulations provide parameters for institutions to use in establishing their specific standards of satisfactory progress for purposes of awarding student financial assistance (Pell Grant, Supplemental Educational Opportunity Grant, College Work Study, National Direct Student Loan, Guaranteed Student/PLUS Loan, State Student Incentive Grant Programs, and other financial aid programs offered by the college). Students who are not making satisfactory academic progress are prohibited from receiving financial aid. A complete copy of the Northern Essex Community College criteria for determining satisfactory academic progress is available in the Financial Aid Office.

How Need is Determined

Financial Aid is awarded on the basis of financial need. Financial need is the difference between the estimated cost of attendance and the calculated amount the student and family can reasonably be expected to provide. The estimated cost of attendance includes tuition, fees, books, room and board, transportation, supplies, and personal expenses.

The student and family contribution is affected by taxable and untaxed income, assets, medical expenses, number of dependents, number in the household, the number of family members in college and other necessary or unusual expenses.

Financial Aid Award Package

An award package may be a combination of any of the following aid programs. A Financial Aid Form (FAF) must be completed to receive consideration for these awards.

Pell Grant: A program funded by the federal government. Once an applicant has completed the application process, a Student Aid Report (SAR) will be sent directly to the applicant entitled to receive a Pell Grant, the award amount will be based on the cost of education, the student's enrollment status and the eligibility index. All pages of the SAR must be sent to the Office of Financial Aid before an applicant can receive a grant.

Massachusetts Board of Regents Tuition Waiver: The Massachusetts Board of Regents of Higher Education, the legislative governing board of all public institutions of higher education in the Commonwealth of Massachusetts, has adopted a Tuition Waiver program to ensure that those students most in need receive the financial assistance necessary to begin or continue their education at the post-secondary level. Financial need is determined by the Office of Financial Aid utilizing the federally approved financial needs analysis system. This system assures that equitability and standardized criteria for determining needs will be vigorously applied to each candidate's particular case.

Supplemental Educational Opportunity Grant (SEOG): A grant for students who would be unable to attend school without this aid. This award is limited to undergraduate students. Students with a bachelor's degree are not eligible for this aid.

Massachusetts Board of Higher Education Scholarships: Awarded to needy students who are Massachusetts residents. The Massachusetts State Scholarship is for \$900. The priority filing date is May 1st. This program is administered by the Board of Regents and utilizes the FAF as the application form.

College Work-Study (CWS): Provides an opportunity for students to work. It is awarded to students with the greatest need. Jobs are on campus and attempts are made to find vocationally related positions. Students are paid every two weeks for the hours they have worked.

Perkins Loan: A low-interest, long-term loan awarded by Northern Essex. Loans may not exceed \$3,000 for the first two years of college and \$6,000 for undergraduate study. The interest rate of 5% begins six months after enrollment. While the repayment period extends up to ten years, there is a minimum payment of \$30.00.

Guaranteed Student Loan Program: A low-interest, long-term loan available through participating banks. The 8% interest charge for new borrowers will be paid to the bank by the federal government while students are in school and during a six-month grace period after leaving school. A student may borrow up to \$2,675 per year to a maximum of \$12,500 for undergraduate study. Applications are available through local banks. This loan is based on financial need.

Additional Scholarship Sources

In addition to the need based aid programs administered by the Financial Aid Office, NECC students may wish to apply to one or more of the following scholarship programs. Application information is available in early Spring.

NECC Scholarship Awards: A series of full tuition scholarships based on academic excellence,

distinctive contributions to the community or athletic ability. Nominations are submitted by high school guidance counselors and teachers.

NECC Faculty Association Scholarship: Five scholarships in the amount of \$300 are awarded to students with at least a 3.0 grade point average.

NECC Foundation Scholarship: Three scholarships of \$500 are awarded to students with at least a 3.5 grade point average.

NECC Alumni Association: A \$250 scholarship award is made to one NECC student each year.

The James P. "Jake" Rurak Memorial Scholarship: A scholarship to honor the memory of James P. Rurak, his efforts as a State Senator in establishing Northern Essex Community College, and his contributions to the people of the Commonwealth of Massachusetts. Established for students interested in a career in community or public service.

The Francis J. Bevilacqua Scholarship: A scholarship for current NECC students with a 3.0 grade point average who are residents of Haverhill and who have demonstrated involvement in public service.

Betty Jo Coppola Scholarship: An annual full tuition award to a day Nursing student entering the second year. Based on academic performance and financial need.

Ann Scannell Scholarship: An award not to exceed \$1,000 a year for tuition and fees is made each year to a student entering Nursing III of the Northern Essex Nursing Program.

Lung Association Scholarships: Four \$500 health career awards are available for students in the Nursing, Respiratory Therapy and other health curricula.

Haverhill School Committee Scholarships: The Committee makes numerous awards from seven scholarship funds to Haverhill residents entering college each year.

City of Lowell Scholarship Grants: There are eight \$300 two-year scholarships awarded each year to entering students who are residents of Lowell.

North East Essex District Alliance for the Mentally Ill Scholarship: An annual award of \$100 is made to a student who has completed 24 credits in the Mental Health Technology Program with a cumulative grade point average of at least 2.0.

Soroptomist Foundation Scholarships: This award is to promote upward mobility in mature women who would like to enter college after being out of the workforce for a number of years.

The Milton J. Myers Memorial Dental Scholarship: Three \$400 awards are made each year to students entering the Dental Assistant Program who demonstrate financial need.

Alumni Overseas Academic Program Scholarship: An annual award of \$200 to a student who will be enrolling in the Overseas Academic Program. The recipient must have a grade point average of 3.0 and have completed at least 30 credits.

Massachusetts National Guard Tuition Waiver Program: Full tuition exemptions are available for all members of the Massachusetts Army and Air National Guard.

Air Force ROTC Scholarship: Application can be made at the end of the freshman year by students with at least a 2.5 grade point average who are enrolled in the ROTC program.

Student Life

The Student Center is home base for co-curricular activities at Northern Essex. A variety of student offices, services and activities are located in the center.

Co-curricular activities and services include the Student Activities Office, Student Senate, game room, college newspaper and radio station, study/television lounge, veteran's club, the cafeteria and the bookstore.

Offices providing essential student services include counseling, students with disabilities, cooperative education, placement and career services, and student health.

The student Center also provides facilities for small concerts and feature films.

Student Activities Office

The Student Activities Office provides a comprehensive program of co-curricular events. Concern for the co-curricular needs of the community college student is an on-going priority in the Student Activities Office.

Student I.D. Card

All Day Division students are required to carry an I.D. card. This means of identification is necessary for library rentals, admittance to the Student Center gameroom, and to establish eligibility for student discounts at athletic contests and off-campus activities. Students must have I.D. photos taken at posted times each semester.

Student Government

Northern Essex provides a system of student government through which students can learn democratic principles, parliamentary procedure, leadership styles and skills, decision-making, group dynamics, the complexity of interorganizational relationships, change-agentry, long and short-term planning, representation of constituencies and financial planning.

Each semester students in the Day Division are assessed an activity fee. This fee entitles individuals to membership in student government, and to representation elected by the student body. Election of representatives is held during the fall semester. Representatives serve for a one year period. Those who will return in the fall semester are appointed by the President of the College on an interim basis during the summer months. As the governing body, the representatives participate in the formation of student organizations and become involved with the budgeting and expenditure of the Student Activity Fund. The student activity fee is optional for students enrolled in the Division of Continuing Education and Community Services. Payment of the activity fee entitles continuing education students to the privileges listed above.

Co-Curricular Activities

The Student Activities Program, funded by the Student Activities Fund, is designed to supplement, complement and interact with academic studies. Through a network of staff interaction, faculty advising, clubs, teams and other groups, students can share ideas and interests, make choices, interact and communicate, socialize, form relationships and gain confidence and self-awareness.

The program offers an active intramural and recreation program. The recreation program provides opportunities for students to participate in trips, lectures and demonstrations on and off campus.

The Program Committee, made up of members of the Student Senate, sponsors a regularly scheduled entertainment series which brings group and individual entertainers to the campus.

The Student Activity Program supports student publications and more than thirty clubs ranging from dance, theatre, photography and contemporary affairs, to newspaper reporting, radio broadcasting, weightlifting, skiing and karate. All specialized groups and clubs are approved by the Student Senate. Requirements for approval include a defined name and purpose, a desig-

nated faculty advisor, active membership, and elected officers to lead and conduct the group's business.

For complete information on the Student Activity Program, contact the Student Activities Office in the Student Center.

Varsity Athletics

The purpose of athletics at Northern Essex Community College is to provide a chance for the highly skilled student athletic to participate in competitive sports with individuals from other institutions of higher education. Presently, NECC participates in varsity soccer, fall and spring baseball, basketball for men and women, and softball for women. Northern Essex participates in two competitive leagues: the Greater Boston Small College Conference comprised of many colleges in the Boston Metropolitan area, and the Massachusetts Community College Athletic Conference.

Campus Guidelines

Northern Essex Community College supports a code of student rights and responsibilities designed to provide an atmosphere in which sound intellectual and academic development is possible. A detailed statement of student responsibilities and rights is published in the Student Handbook.

Student Absences Due to Religious Beliefs

In accordance with Section 2B of Chapter 151C of the General Laws of the Commonwealth of Massachusetts, students in an educational or vocational training institution, other than a religious or denominational educational or vocational training institution, who are unable, because of their religious beliefs, to attend classes or to participate in any examination, study, or work requirement on a particular day shall be excused from any such examination or study or work requirement, and shall be provided with an opportunity to make up such examination, study, or work requirement, which they may have missed because of such absence on any particular day; provided, however, that such makeup examination or work shall not create an unreasonable burden upon such school. No fees of any kind shall be charged by the institution for making available to the said students such opportunity. No adverse or prejudicial effects shall result to any students because of their availing themselves of the provisions of this section.

Publications

No student or group of students in connection with any publication, public performance or social activity shall use any name or designation that implies a relationship with the college without the sanction of the President of the College or the officers he designates.

Alcohol/Drugs

The college complies with all state and federal laws governing the possession, use and sale of alcohol, drugs, and other illegal substances on campus and at all campus-sponsored activities.

Housing

No housing facilities are provided by or supervised by the college. Students who wish to move into the immediate college area may rent housing. The Student Activities Office maintains a list of available housing. Students are expected to respect the rights of the people from whom they rent housing and conduct themselves courteously.

Student Grievance Procedure

This procedure secures prompt and equitable resolution of student grievances. Customary channels of communication are used wherever feasible, in seeking clarification of questions of concern, before the grievance procedure is utilized. Details of the procedure are published in the Student Handbook.

Advising and Counseling

Counseling

Northern Essex has a staff of professional counselors who understand the problems of the commuting student, the demands of academic life, and the uncertainties students may feel about educational planning, the details of transferring to another college for further study, and selecting an appropriate career. Whether students are traditional or non-traditional, the Counseling Staff can provide counseling and consultation in the following areas:

- Career counseling: individual appointments and group workshops to assist students in choosing, changing or preparing for careers.
- Degree requirements: help with planning a course schedule which will meet degree requirements.
- Personal problems: the counseling staff is trained to help students solve personal problems, or to refer students to someone else who can help.
- Counseling is available on a walk-in basis, or appointments may be made in advance. All counseling is confidential.

Counselors are located in Room F-121 in the Student Center and in the Continuing Education Office, Room B-204 in the Applied Science Building.

Academic Advising

Each Day Division student is provided with an advisor, usually a member of the college faculty, who will help the student utilize the resources of the college and the community to achieve academic, career and personal goals. Academic advising is available at all times during office hours of the Continuing Education Office.

Veterans Information

Students who are veterans, active reservists, on active duty with the National Guard or eligible dependents of a veteran may be eligible for educational benefits or one of the programs summarized below:

Federal GI Benefits: Monthly educational stipend to eligible veterans (or dependents) who entered the service during the Vietnam era: January 1957 to December 1976 (10 years from date of discharge or 1989 whichever comes first).

Two for One Program: Federal benefit that provides for monthly stipend to post Vietnam veterans (after January 1977), who participate in the Two for One Program.

Active Duty National Guard or Reservist Program: A program that provides for a monthly stipend of tuition reimbursement for active duty personnel of the National Guard or Reserves.

State Tuition Exemption Program: A benefit available to all Vietnam era veterans who enlisted while a resident of Massachusetts or have resided in Massachusetts for at least two consecutive years. Eligible veterans may attend any one of the state colleges, universities, or community colleges, *tuition free*, days, nights, or summers; only applicable fees are paid.

For more information about veterans services and benefits, contact the Registrar's office, phone 508-374-3974.

Cooperative Education and Placement

The Office of Cooperative Education and Placement, located in the Student Center, includes the campus office of the Massachusetts Division of Employment Security, the Career Resource Library, credential files and counselors to assist those seeking employment. The office provides students with the kind of cooperative education opportunities and employment information needed to understand the implications of their educational and vocational decisions. Services available include:

- A listing of jobs that have been sent to the college by area employers. Many of these positions are directly related to academic programs and could provide students with good entry level opportunities and the necessary work experience to make it easier to obtain employment after graduation. Many of the positions available may be used by the students for Cooperative Education and thus earn academic credit.
- Provisions for employers to visit the college for recruiting purposes. Approximately four times per year, the Office of Cooperative Education and Placement sponsors job fairs. These informal gatherings are popular with the students and provide an opportunity to obtain career information and possible jobs.
- A Career Resource Library which includes information on career opportunities. There is information on various colleges within the United States and catalogs on most institutions of higher education located in New England.
- Assistance in the development of a resume and the learning of proper interviewing techniques.
- Information on Cooperative Education courses.
- An on-site office of the Massachusetts Division of Employment Security (D.E.S.). The D.E.S. Office is staffed by a full-time person from the Division of Employment Security and provides a variety of services geared to help those who need assistance in making vocational choices or changes. Daily job listings and a microfiche reader provide the latest professional, state and local job listings, full and part time. For an appointment, contact the D.E.S. Office. The number is 508-374-3670.

Office for Students with Disabilities

The Office for Students with Disabilities (OSD) helps the college meet the special needs of students who have physical, sensory, emotional and learning disabilities and chronic diseases. OSD provides such services and auxiliary aids as are necessary to enable otherwise-qualified students with disabilities to participate to the fullest extent possible in all college programs and activities.

OSD maintains close working relationships with the various vocational rehabilitation agencies, often serving as an advocate for students. Prospective students and their parents or service providers are encouraged to call with any questions or to arrange a visit to the college. All public buildings on campus are equipped with necessary ramps, elevators and accessible restrooms. If needed, the OSD staff work with individual students and instructors to help meet the particular demands of each class.

Some of the support services available to students with disabilities include a special parking permit, preferential registration, special academic and/or career guidance, supportive counseling, special emergency evacuation procedures, classroom note taking/scribing and Social Club.

Special Services for Students with Hearing Impairments: Northern Essex has become a Massachusetts and New England regional center for college students who are deaf or hard-of-hearing. With a full-time counselor who is deaf, more than forty hearing-impaired students and a growing number of teachers who teach classes using sign language, the college provides an attractive environment. Some of the special support services available include sign language or oral interpreters, counseling in ASL, signed English or oral college preparatory classes, independent living skills training, captioned films, closed captioned television decoders, TDD (TTY) 24-hour announcement/message service, FM auditory trainer, and students' club.

Special Services for Students Who are Blind or Visually Impaired: Some of the special support services available include assistance obtaining tape-recorded texts, Kurzweil reading machine (speech synthesis), Vtek (Visualtek) reading machine (print enlarger), computers with speech synthesizer, assistance in laboratory courses and orally administered tests and scribes.

In addition, the OSD provides, or helps arrange for the provision of special services as neces-

sary for students with mobility and/or manual impairments, specific learning disabilities and other disabling conditions.

The OSD is located in the Student Center (ramped entrance facing the Library building). The telephone numbers are Voice calls: 508-374-3654; and TDD calls: 508-374-3659 (TDD equals Telecommunications Device for the Deaf).

Student Health Service

The Student Health Service is staffed by a full-time nurse director and a part-time registered nurse, under the direction of the school physicians. The Health Service is open daily, Monday through Friday, 8 am to 4 pm in Room F-112 in the Student Center. The physicians hold regularly scheduled clinic hours each week.

The Health Service provides first aid care for acute illnesses, crisis intervention, immunizations, treatments, counseling, referrals to a variety of agencies in the surrounding communities, and follow-up as needed. All services provided, including physician services and supplies, with the exception of certain tests, are free of charge to students. Prescriptions written by the school physician may be filled at a pharmacy of choice at the student's own expense. Gynecological services are available, including Pap smears, for a nominal fee. Care for chronic medical problems and extensive laboratory, medical and x-ray work-ups are not provided by the Health Service. Assistance will be given with referrals to outside agencies or medical specialists as needed. In such cases, the student is responsible for expenses incurred.

A major emphasis of the Health Service is preventive health education. The Health Service provides on-going outreach health clinics including health screenings, health education and referrals to community health resources.

The Health Service staff is available during office hours to respond to emergencies. All emergencies should be reported to the switchboard operator who will page a nurse. At other times, and for serious illnesses or injuries, a community-based ambulance service is used for transportation to nearby area hospitals.

A student may be asked to complete a form describing general health, health history and any supportive services that may be required before services are rendered. For practicum/clinical placement, more complete health records are required. Students will not be allowed to participate in the clinical portion of their program until all information is on file.

Student Health Insurance: all students in the Day Division are required to carry the basic Student Health Insurance plan (accident insurance). This plan is optional for students in the Division of Continuing Education & Community Services. Every accident must be reported to the college nurse. Claim forms for medical expenses are available at the Health Service and must be submitted by the student in order to realize insurance benefits. Insurance fee waivers are available for students with adequate health insurance coverage; contact the Health Service for more information.

Students are encouraged to elect the Supplemental Accident and Sickness Insurance Medical Plan at a nominal additional premium. This extended plan may be designed to include other family members also. This extended plan is especially important for students who will become 19 years of age during the college year and may not be eligible for coverage under their parents' insurance plans. A complete description of both plans is mailed to each student. Additional copies are available in the Bursar's Office.



Academic Support

Bentley Library

The Bentley Library serves the varied informational needs of the students, faculty, and staff of the college. The Library supports the College's academic programs and provides for the research needs of the students as well as the professional development of the faculty.

There are 50,000 circulating volumes, 5,000 volumes within the reference and law collections, and 450 periodical and newspaper titles in microfilm and hard copy. Twenty-nine general and specialized magazine indexes provide sources for manual searching, and the Library has two microfilm reader/printers, three microfilm readers, and two photocopiers.

The library staff provides in-depth reference service, interlibrary loans and computer literature searching. In addition, librarians provide instruction to groups and individuals on the bibliographic research process and on strategies for locating and using library materials. Students and faculty are able to use other Massachusetts public colleges and university libraries, as well as area libraries. Additional educational resources are available through the Library's involvement in consortia that include most of the public and academic libraries in northeastern Massachusetts. A complete list of cooperating libraries is available at the circulation desk. Through interlibrary loan programs, the compilation of a serials union list in conjunction with the Merrimack Valley Interlibrary Cooperative, and by participating in a computerized cataloging system (CLC) the Library is able to optimize its shared resources.

Professional staff are on duty during the hours the library is open: 8 am to 9:30 pm, Monday through Thursday and 8 am to 5 pm on Friday. The Library is closed on Saturday, Sunday, legal holidays and also evenings during August after the close of the summer session.

Instructional Media Center

The Instructional Media Center works to meet the non-print needs of the college community by providing a full range of audiovisual materials and production services.

The IMC maintains a large, comprehensive collection of educational media materials in a variety of presentation formats. The materials include 16mm films 3/4" umatic videotapes, filmstrips, slide programs, audio cassette tapes, records, and overhead transparencies. A software catalog is available at the IMC.

Production services include television, photographic, and microcomputer program development. A director, technical staff, and work-study assistants work to provide concept to completion support in the development of original learning materials.

A state of the art television facility offers both studio and remote capability as well as editing and post-production. The IMC is an origination point for the community cable television system. The IMC is open from 8 am to 9:30 pm Monday through Thursday, and Friday from 8 am to 5 pm.

Academic Support Center

The Academic Support Center assists students in developing the skills necessary to succeed in college. The Academic Support Center offers drop-in services in reading, writing and math, as well as assessment of skills, academic guidance, and tutoring in the content areas.

Students who are uncertain about their goals or abilities, who had an unrewarding high school experience, who are unfamiliar with the demands of college, or who need to improve their basic skills are urged to contact any of the following areas for further information or assistance.

- The *Assessment Center* helps students become aware of their ability levels in the areas of reading, writing and mathematics. Such awareness is crucial for future success in a college environment. Students and prospective students may make arrangements for assessment testing in basic skills and English as a foreign language, learn about developmental courses available at Northern Essex and, if qualified, make arrangements for private peer tutoring.

The College-Level Examination Program (CLEP) is offered through this Center. Students who are interested in assessing and improving their academic skills are invited to visit or contact the Assessment Center, Room C-201. The number is 508-374-5814.

- *Academic Advising Services* are available to students who are unsure of their educational or career goals. Free guidance and counseling is provided for general academic questions, for career exploration and for students who learn differently. For more information, contact Academic Advising Services in Room C-201. The number is 508-374-5808.
- The *Peer Tutor Program* is a service provided to eligible students and administered by the Academic Support Center. It enables students to receive free tutoring from qualified, paid student tutors in content areas. For more information, contact Peer Tutoring Service in Room C-201. The number is 508-374-5809.
- The *English Language Center* provides ELC courses and counseling to individuals who need to build English language skills. the ECL office is located in Room C-213 at the Haverhill campus, or you may contact the Lawrence Education/Employment Project (LEEP), located on the third floor of the Lawrence Public Library. The number is (617) 683-4259.
- The *Math Lab* provides services to students ranging from basic arithmetic to advanced topics in calculus. The staff of the Center pride themselves in being especially sensitive to individual needs. Problems such as test-taking and math anxiety are addressed on an individualized basis. The services are available to all students and to members of the community on a drop-in basis. For more information contact the Math Lab, Room C-211. The number is (508-374-3847.
- The *Reading Lab* assists individuals in developing effective reading and study skills. Students enrolled in Basic Reading or College Reading are helped through the Lab. An individualized course of study may also be developed. Each student receives ongoing personal attention from Reading Lab staff while having the opportunity to interact with fellow students. Assistance on a drop-in or referral basis is also provided for students with specific requests. For more information contact the Reading Lab, Room C-206. The number is 508-374-3844.
- The *Writing Lab* helps students who need to improve their writing ability. Any student may drop in at any time or be referred for non-credit assistance with any writing problems. All students working in the Writing Lab receive a diagnosis of writing problems, a program of work and tutorial assistance to help them overcome those problems, and continual evaluation of their progress. For more information, contact the Writing Lab, Room C-203. The number is 508-374-5803.
- *English Language Support Services* provides tutoring support to individuals who are taking courses to build their English language skills. The ELC office is located in Room C—213 at the Haverhill campus, and on the third floor of the Lawrence Public Library. The number is 508-683-4259.

Specialized Study Opportunities

Prep Study

Some applicants may lack the educational background or certain skills necessary to pursue some courses required in their degree program. Upon acceptance to their degree program, these students may be required to take prerequisite courses in preparation for courses required later in their degree program. Prep Study enables students to begin their degree program and to obtain the necessary educational background or skills. Most, if not all, of the Prep Study courses will be fully applicable to the student's degree program.

English Language Center (E.L.C.)

The English Language Center (E.L.C.) seeks to assist students who wish to gain proficiency in academic English. Such students are mainly individuals for whom English is not a native language and who lack the proficiency in academic English judged necessary to be successful in all areas of college level work. Upon acceptance into a degree program, an applicant may be required to increase general fluency and/or command of academic American English through the E.L.C.

Any person may take the college's *English Language Evaluation* test battery (Grammar and Structure, Oral Communication Skills, Reading, Writing) to determine if they may profit in taking E.L.C. courses. Call 508-683-4283 to make an appointment

The E.L.C. offers a full range of courses to prepare people whose native language is not English for course work at the college level in specific mediums of instruction, if they are otherwise academically qualified.

Note: Credit for Life Learning is not offered by the college for any E.L.C. course.

G.E.D.

Working in conjunction with the Division of Instructional Development, the Division of Continuing Education & Community Services offers the General Educational Development (G.E.D.) preparation course and testing program. Northern Essex is an official G.E.D. testing center and many hundreds of area citizens have qualified for high school equivalency diplomas at the college.

The broadly based G.E.D. preparation course reaches out to locate people who need a high school equivalency diploma, motivates them to prepare for a G.E.D. test, suits the preparation material to the needs of the individual and provides extensive personal and employment counseling.

Cooperative Education

Cooperative Education provides students with full- time or part time jobs related to their academic programs and/or career objectives. Cooperative Education courses are founded on the philosophy that you learn more effectively when you learn by doing through integrating classroom instruction with practical, supervised on-the-job experience. Students are usually paid for the work performed while participating in Cooperative Education. A sampling of current job openings is posted on the board outside the Office of Cooperative Education & Placement in the Student Center, in the lobby of the Liberal Arts (C) Building, and at various other locations around campus.

Students interested in Cooperative Education are referred to the Office of Cooperative Education & Placement where they make application and are interviewed by a member of the co-op staff. Co-op students must participate in at least one workshop. With the assistance of the Cooperative Education staff, an appropriate job is secured by the student. Once employed in a co-op job, a student must develop a training agreement listing objectives to be accomplished in the course during the semester. The work-site supervisor assumes the role of adjunct instructor, using the employing organization as a learning laboratory. Faculty coordinators will visit the

work-site during the semester and will receive help from the work-site supervisor in the evaluation of the students progress.

Students may use credit earned in Cooperative Education as an "add-on" to the prescribed program of study, or to replace an elective within the program. Co-op courses generally are not used as substitutes for electives outside the major. However, it is the Academic Department that determines whether or not co-op credit may be used for graduation. Before registering for Cooperative Education, students should check with their academic advisor or the faculty Cooperative Education coordinator from the appropriate academic division of the college.

For further information on services available, contact the Office of Cooperative Education & Placement in the Student Center, Room F-139. Telephone 508-374-3670. Employers seeking student employees on either a full time or part time basis are encouraged to list their needs with the Office.

Overseas Academic Program

As a member of the College Consortium for International Studies (CCIS), Northern Essex offers an opportunity to qualified students to study and live overseas for a semester or a year. Some seventeen different international/intercultural programs abroad are available. At the time of publication, these programs included China, Cyprus, Denmark, Ecuador, England, France, Germany, Ireland, Israel, Italy, Jamaica, Mexico, Portugal, Scotland, Spain, Sweden and Switzerland.

A large contingent of Northern Essex students has used the opportunity to study at overseas institutions and, upon return, has successfully transferred to prestigious four-year institutions. The academic and personal benefits of studying abroad are well recognized, and all interested students are urged to inquire about the college's relatively low cost and high quality overseas academic program.

For further information contact Usha Sellers, Director, Overseas Academic Program, at 508-374-5822.

International/Intercultural Education

Learning and teaching which encompass a global perspective are central to the mission of Northern Essex. Through introductory courses which integrate such a perspective, and through specialized courses as well as cross-registration at a NECCUM (North East Consortium of Colleges and Universities in Massachusetts) college, interested students can design a course of studies with a strong focus on international/intercultural education. For further information, contact Usha Sellers, Chairperson, Division of Social Sciences, at 508-374-5822.

In addition, the International Club and the International Studies Committee are active sponsors of exhibitions, speakers, events, and discussions to promote international/intercultural understanding and an appreciation of cultural diversity.

High School Seniors

Students may take courses at Northern Essex for credit (on a full time or part time basis) while still in high school as participants in the College Experience for High School Seniors or the Advantage programs. For more information, contact the Admissions Office. The number is 508-374-3600.

Lawrence Education Employment Program

The Lawrence Education Employment Project (LEEP) opened its doors in January 1985, and has perhaps been the most effective outreach effort to the minority community that the college has ever made.

This vital and highly successful project operates with the support of the Legislature of the State of Massachusetts and the Commonwealth's Board of Regents of Higher Education to meet the educational and employment needs of those individuals who have encountered barriers to

employment and self-sufficiency because of a lack of education, work skills or both. LEEP primarily seeks to assist Hispanics and the socio-economically disadvantaged residents of the City of Lawrence. Components include assessment, prevocational basic skills. English Language, employment workshops on cultural orientation to life and work, and training programs. Support services include academic counseling, job placement, and efforts to resolve child care and transportation problems.

NECCUM Cross-Registration

Students enrolled at Northern Essex Community College may cross-register at any of the other educational institutions which form the Northeast Consortium of Colleges and Universities in Massachusetts (NECCUM). NECCUM members are Bradford College, Endicott College, Gordon College, Marian Court College, Merrimack College, Middlesex Community College, Monserrat School of Visual Art, Northern Essex Community College, North Shore Community College, Salem State College and the University of Lowell.

Students enrolled as full-time Day Division students at NECC, with a grade point average of 2.0 or above, may take up to two courses a semester at any NECCUM college on a seat-available basis. First semester freshmen are excluded except for students enrolled in ROTC. Tuition is free with the exception of lab fees and fees for specialized courses. Forms and additional information on NECCUM cross-registration are available in the Registrar's Office.

Air Force ROTC Program

Through a crosstown agreement with the University of Lowell, students may participate in the Air Force Reserve Officer Training Corps (AFROTC). Registration for AFROTC is the same as registration for most other college courses. ROTC class schedules and additional information may be obtained by calling Air Force ROTC, Detachment 345 at the University of Lowell. The number is 508-459-9301.



An alumna of the Paralegal Studies Program on the job.

Continuing Education

The primary goal of the Division of Continuing Education and Community Services is to help people improve existing skills or learn new ones and grow in understanding and in personal satisfaction.

The Division offers credit courses in a wide variety of subject areas. Courses may be taken individually or as part of a certificate or associate degree program. Associate degree and certificate programs are available in the liberal arts, business, health professions, human services, office and business education, and in the technologies. Depending on the number of courses taken throughout the year, an associate degree can be achieved in two to four years. A modular program in Business Management is structured so that students may study on a part-time basis and still complete associate degree requirements in two years.

Non-credit special interest courses are offered each semester. Development courses, outdoor adventures, English Language Center courses, career exploration and business workshops, GED high school equivalency preparation, recreational and leisure activities, physical conditioning, enrichment in the arts, courses for singles and self-development give an idea of the range of programming. Continuing Education Unit (C.E.U.) credit is available in the health professions, early childhood education, and social work.

Developmental courses are offered in reading, writing and math. Cooperative education courses add a work experience component to classroom study. The Division is responsible for implementing the college's summer session, day and evening.

Through the Center for Business and Industry, the Division provides on campus or on site training programs especially designed to meet the needs of business and industry. The Division also sponsors workshops, conferences, and courses for local organizations and agencies.

Registration

Anyone may register for any course offered in the Division of Continuing Education and Community Services. A high school diploma is not necessary. Prospective students are always encouraged to see a counselor before registering for academic courses or programs. Students who wish to enroll in an associate degree program, however, must meet the admission requirements of the college. Registration sessions are regularly scheduled at local malls and at extension campuses as well as at the main college campus. A Gold Card registration is scheduled for people 60 years of age or older. See the Admission section of this catalog for details.

Counseling/Advising

Counseling is available throughout the year. New students and students not certain of their educational direction are particularly urged to make use of the counseling service for help in selecting the courses best suited to their individual needs and goals.

The Counseling Office offers programs to serve the needs of continuing education students. Personal and academic counseling is available daily during each semester and in the summer. Anyone interested in continuing education is free to use the counseling services at the college. It is not necessary to be a student at Northern Essex to talk to our counselors.

Transfer after NECC

Transfer Programs

The degree programs at Northern Essex formatted specifically for students who plan to transfer to a four-year college or university after graduation are Liberal Arts, Business Education, Business Transfer and Engineering Science. These programs parallel the first two years of similar programs in most public and private senior colleges throughout the country and provide a solid basis for transfer with advanced standing.

Career Program Transfer

Although career program courses are not specifically designed for transfer to a senior institution, they do have transfer potential. Many Northern Essex students in career programs have been accepted, after graduation, to programs in senior colleges related to their career fields. It is the responsibility of students to select courses at Northern Essex that will be acceptable for their chosen field of study at a senior institution of their choice. Careful study of the catalog of that institution will answer most questions. Students should request from the registrar of the senior institution they select a copy of that college's catalog. Counselors at Northern Essex are readily available to help students work out transfer requirements.

Post-Graduate Credit

Credit at Northern Essex may be granted for courses which have previously been counted toward a degree which an individual has been granted (whether baccalaureate or associate degree) provided the courses previously taken are applicable to the Northern Essex curriculum in which the student is currently enrolled.

Capstone Agreement

Capstone transfer agreements exist between NECC and the University of Lowell, Bradford College, Emmanuel College, Salem State College and Wentworth Institute of Technology for transfer from specific programs at Northern Essex into specific programs at these senior institutions. For further information, contact the Admissions Office.

Commonwealth Transfer Compact

On May 9, 1984, the Board of Regents of the Commonwealth of Massachusetts adopted the following policy to become effective on September 1, 1984. This policy concerns all students who are transferring from a Massachusetts state community college to a four-year Massachusetts state college or university with an Associate of Arts transfer degree or an Associate of Science transfer degree:

- *Community College Transfer Degrees:* All college level courses taken in the community colleges will be applied first toward the fulfillment of the general education requirements of the receiving institution. The remaining course credits earned at the community colleges will be assigned toward the major requirements and/or the graduation requirements. Students are encouraged to place heavy emphasis on general education courses during their first year.
- *The Associate of Arts Transfer Degree:* The basic community college program for the Associate of Arts Transfer Degree should involve a minimum of 33 semester hours in general education. As part of these 33 semester hours, each institution will require students to complete a minimum of semester hours in each of the following:

English Composition/Writing	6 s.h.
Behavioral and Social Sciences	9 s.h.
Humanities and Fine Arts	9 s.h.
Mathematics and Natural Sciences	9 s.h.

- *The Associate of Science Transfer Degree:* The Associate of Science Transfer Degree recognizes a greater emphasis on the scientific, mathematical and technical competencies demanded of students and, therefore, must include a greater degree of concentration in these

disciplines. Each community college is encouraged to develop a general education concentration within the transfer parameters, respective of the particular degree disciplines offered.

The 60 credits that are granted will, under Compact policy, include D grades. Most colleges will not, however, grant credit for a D grade if it was earned in a course required for the major. The receiving institution is required to apply D credit toward a major only if it does so for students who originally enrolled in that institution as freshmen. Furthermore, all associate degree holders accepted for transfer under this Compact will be subject to no special requirements beyond those specified as major department and/or graduation requirements for students who originally enrolled in that institution as freshmen.

Therefore, it is recommended that students who plan to transfer to a Massachusetts state college or university complete their program and receive an associate degree, and include in their program of courses the core courses listed above as requirements for the Compact transfer.

Students with questions or problems upon transfer under the Commonwealth Transfer Compact should contact the Counseling Office in the Student Center.

The "Sky's the Limit" hot air balloon rally and open house is an annual affair at Northern Essex.



Academic Standards

Academic Regulations

Academic standards have been established at Northern Essex Community College to help students attain understanding, competence and excellence. Standards apply to all students enrolled in both the Day Division and the Division of Continuing Education & Community Services except as noted below and in the section of this catalog entitled Division of Continuing Education & Community Services.

Matriculated Status

Once students have matriculated – been accepted by the college into one of its associate degree or certificate programs of study – they must maintain a prescribed academic standing in order to continue from one semester to another. Matriculation must occur in order to be graduated in one of NECC's programs of study.

Academic regulations are applied in both the Day Division and the Division of Continuing Education & Community Services, with the following exceptions:

- Students who have matriculated through the Division of Continuing Education & Community Services may continue their studies towards a degree or certificate even though they may not choose to enroll in consecutive semesters.
- The regulation pertaining to academic suspensions is managed differently for students who have matriculated in the Division of Continuing Education & Community Services. Such students are normally not suspended; however, they may lose their matriculated status (which may result in loss of financial aid or veterans' benefits) or be put on a probationary status.
- Drop/add time periods for short term, accelerated, or extended courses may differ from the traditional semester time periods. However, posted time periods are equivalent.

Policies and procedures relating to academic standards in the college are handled by various administrative and student support service areas. General inquiries from Day Division students should be directed to the office of the Dean of Student Services, and those from students in the Division of Continuing Education & Community Services to that division's office. Specific contact references are named as appropriate in the material which follows.

Academic Ethics and Plagiarism

The college expects all students to maintain high standards of academic honesty and integrity. Plagiarism is clearly an example of a violation of Academic Ethics and is a major offense. Plagiarism is defined by the college to be the use of any other person's work or ideas as though the work or ideas were your own, without giving the appropriate credit.

Instructors are required to provide students with a clear written definition of plagiarism applicable in their discipline as part of their course syllabus, which they provide students during the first two weeks of each course.

Students are responsible for understanding what plagiarism is in each of their classes. The college's definition and that of your instructor will be used as a criterion against which all plagiarism allegations will be judged. Instances of plagiarism will be dealt with first by the instructor who discovers, or is made aware of, the incident. Instructors must discuss the evidence of plagiarism with the student prior to taking action. Instructors who take action as a result of a plagiarism incident may report such action to the Dean of Academic Affairs. There shall be a range of penalties at the discretion of the instructor which may extend to a recommendation to the Dean of Academic Affairs for expulsion from the college. The Dean of Academic Affairs may take disciplinary action against students who are reported for plagiarism.

Students have a right to file a grievance if they feel that the action taken in the alleged plagiarism case discriminated or abrogated their individual or student rights. Students can contact the

Dean of Student Affairs for detailed information regarding Massachusetts Board of Regents of Higher Education Student Grievance Procedures.

Second and Dual Degree Status

Students may seek a second degree by reapplying for admission into a new program after they have received their first degree.

If a student applies for a second degree, only those courses taken in the first degree that are applicable towards the second degree will receive credit. Only those courses completed during the second degree will be computed for the QPA. In addition, to qualify for a second degree a student must:

- Meet all specific degree requirements of the program for which a second degree will be granted.
- Complete the specific courses, as identified and approved by the appropriate individual or committee at the institutional level, needed to complete the second degree. This information will be made available to the college community.
- Complete a minimum of 15 credit hours beyond a first associate degree to receive a second associate degree.
- Complete a minimum of 9 credit hours beyond the first degree to receive a certificate.

Students may pursue dual degrees by entering a course of study that will allow them to earn two degrees simultaneously with the exception that a student will not be awarded an associate degree and a certificate in the same subject matter simultaneously. Criteria stated above that qualify a student for a second degree are also applicable to dual degrees. Contact the Admissions Office if you are reapplying for a second degree, and the Registrar's office if you wish to declare a dual degree status.

The Curriculum Plan

The plan for each associate degree or certificate program of studies indicates all or some of the following:

- Specific courses, by number and title, which must be completed and the sequence in which they must be completed.
- Required types of course, such as science, mathematics, humanities, social sciences, etc., which must be completed.
- Elective opportunities (not otherwise limited by specific program requirements) where any course or courses can be chosen as long as the required number of credits to earn the degree is satisfied.

Each curriculum plan is organized and scheduled so that a student who enters in the Day Division in the fall semester can complete the program in two semesters for a certificate and four semesters for an associate degree. In some programs, such as Liberal Arts, Business Transfer and a few others, the curriculum plan can be completed in four semesters for those who enter in January. Students are reminded that a minimum of 24 credit hours of work, and the final year of work, must be completed at Northern Essex in order for a student to qualify for an associate degree. Any student in a one-year certificate program must earn at least 12 credits in classroom activity. In most instances, the time needed to complete the requirements in the Division of Continuing Education & Community Services is about twice that of the Day Division.

In order to meet the requirements in four semesters, a student must complete an average of at least 15 credit hours each semester. This pace involves a course load which, for a variety of reasons, is too heavy for many students. Therefore, many students take five and six semesters to complete their requirements. The college, therefore, defines a full time student as one who is

carrying 12 credit hours in one semester.

Students, in consultation with advisors, select courses and create their schedule during registration. If they are not able to take the courses in the order in which they are listed in the curriculum plan, they must be certain that they have fulfilled any stated prerequisites for courses which are selected out of sequence. Senior students are given priority in registration in order to assist them in being able to select the courses which they need for graduation. Students should consult the most recent college catalog or supplement and their advisor, or a counselor before finalizing any choices. Division and department chairpersons and curriculum coordinators, names of whom are available from the Registrar, may also be consulted.

Academic Residency Requirements

In order to ensure that students attain a level of competency within the course and subject area of their program and curriculum plan, the college requires that a specific number of course credits be earned in residency at the college. Because of this requirement students who are transferring in credit from another college may, in some cases, not receive transfer credit for all courses they completed at the other college.

A minimum of 24 credits for an associate degree program, and 12 credits for a certificate program, are required in order to fulfill residency requirements. In addition, students must be currently enrolled and matriculated at the time they are fulfilling their residency requirements, and be in their final year (or semester) of course work at the time they petition to graduate.

Program/Course Requirements

When a course is listed as a requirement for a degree/certificate in a given curriculum and a student wishes to obtain the degree/certificate without taking such a course, a waiver may be requested.

The student will be asked to complete the appropriate waiver available from the Registrar. Such waivers must be approved by the appropriate division chairperson and the Dean of Academic Affairs.

Course Loads

Students are responsible for knowing what courses are required in their curriculum and for meeting all other academic requirements. In order to graduate in four semesters, students must carry the number of credit hours each semester specified in their curriculum plans. Counselors and faculty are available at registration for advising.

Taking fewer courses than curriculum specifies: students are encouraged to take the number of courses they feel they can manage with good performance. Note, however, that omitted courses or their equivalent should be taken in summer session in order to graduate in two years.

Taking more courses than curriculum specifies: students should limit themselves to the number of courses in their curriculum schedules. Students may request to take more courses in one semester than the suggested schedule if they have attained a QPA of 3.00 or higher at Northern Essex and have approval of their advisor. Final registration approval will depend on the availability of course seats.

Note: Students who enroll in more courses than the suggested schedule may be required by the Registrar to drop a course.

Course Prerequisites

If a student does not have the necessary prerequisite for a course in which he/she wishes to register, it is necessary that the student obtain permission from the chairperson/coordinator of the academic department/program which offers the course. Waiver forms, which can be obtained from the Registrar, must be completed by the student and be approved by the appropriate department chairperson/curriculum coordinator. Approved waivers must be on file in the Registrar's office prior to the 35th day of each semester. Students will be dropped from a course

if they have not met the prerequisite requirement of the course and/or have not received a waiver to take the course.

Adding a Course

A course for which a student did not register may be added to the student's schedule upon a space available basis. A student who wishes to ADD a course must complete the ADD portion of the college's DROP/ADD FORM which is available in the Registrar's office. Exact days, times and Procedures for adding a course are published by the Registrar at the beginning of each Day, Evening or Summer session and are noted in the Academic Calendar.

Dropping a Course

Any student may DROP a course by completing the DROP portion of the DROP/ADD FORM and submitting it in person to the Registrar's office. Failure to drop a course officially will result in an F grade for the course. The following DROP periods are in effect at Northern Essex:

Period 1: Courses dropped officially during the first twenty academic class days of a semester are not recorded on the transcript.

Period 2: Courses dropped during the twenty-first to the forty-fifth day of a semester receive a grade of W, recorded on the transcript but not computed in the QPA.

Period 3: Courses dropped after the forty-fifth day of a semester receive a grade of FW. The FW grade, Withdrawal Failing is listed on the student's transcript.

The length of a Drop/Add period for accelerated or extended courses or sessions may vary, but is equivalent to the above mentioned policy, and posted accordingly. Exceptions to these policies may be made only by the Dean of Continuing Education or the Dean of Academic Affairs. Consult the Academic Calendar for dates relative to dropping a course. Academic Calendars are published each semester and are available at the Registrar's Office, B-219, or at the Division of Continuing Education & Community Services Office, B-204.

Note: All W-type grades carry no earned credit or quality points, but do appear on student transcripts.

Repeating a Course

Students may repeat a course. In most academic programs, there is no limit to the number of times that such a course may be repeated. In each instance the highest grade received when repeating a course will be used to determine the QPA. The notation R appears in the transcript for any repeated course.

Any student repeating a course must complete a Repeat Course Form available in the Registrar's office.

Priority in course seating is given to those who have not previously earned a C or above in the course.

Note: Persons receiving any form of financial assistance should seek written approval from the representative of the agency providing the assistance; for example, the Veterans Affairs Office (on campus), Massachusetts Rehabilitation Counselor, etc.

Auditing a Course

Where specific program requirements do not otherwise prohibit, students may elect to enroll and attend a credit course for self-improvement or individual interest, without the responsibility of fulfilling academic assignments by auditing a course for no course credits. An audit request form, available in the Registrar's office, must be completed during the first twenty (20) days of class.

Enrollment of auditors in courses is subject to the approval of the Dean of Academic Affairs and

the individual faculty member concerned. An audit grade CANNOT be changed to a regular course grade.

Directed Studies Courses

In order to provide for a unique, highly individualized course of study for a single student, or a relatively small number of students, each academic department/program in the college offers Directed Studies courses. Such courses are designed to provide further study through directed readings, directed research projects or seminars, or special class work related to research in a specific subject. Each Directed Studies course is usually initiated in response to student interest, is limited to 5 or fewer students and should not be confused with a Special Topics course.

Special Topics Courses

A Special Topics course may be offered by any academic department/program with the approval of the division chairperson responsible for that area and the chairperson of the Curriculum Committee. The division chairperson, at the time he/she signs the approval form, shall forward an informational copy of the Special Topics course to the Dean of Students Services.

Special Topics courses are normally initiated by faculty or division chairpersons and are created for more than five (5) students. Special Topics courses are regular semester college courses and may be from one to four credits. Classes will meet on a regular schedule.

Dates for submission of Special Topics proposals will follow the time schedule established by the Office of the Dean of Academic Affairs. Approval for Special Topics courses may be granted twice by the chairperson of the Curriculum Committee. When a Special Topics course has been given twice, a formal course proposal should be submitted to the Curriculum Committee for its formal adoption and approval. A Special Topics form submitted simultaneously with the formal course proposal will be approved to cover the course until the Curriculum Committee, Executive Committee and President have acted.

Courses Taken at Another College While Enrolled at NECC

The educational design for each curriculum at Northern Essex is based on the premise that students will fulfill the requirements for a degree/certificate from courses at this college, once they have been accepted into a program. However, when a student lacks one or two courses for completing requirements at Northern Essex and problems of distance, course availability or class time make it very difficult to take the courses at this college, the student may request permission to take a course at another college. Grades given for courses transferred from another college are not computed in the QPA average at Northern Essex.

This alternative will be approved by the Registrar only in hardship situations and is subject to the following stipulations.

- The student must complete a minimum of twenty-four (24) credit hours and the final year of course work at Northern Essex Community College to qualify for a degree.
- The student in a one-year certificate program must earn at least twelve (12) credits in classroom activity at Northern Essex Community College.
- All conditions prescribed in the student's curriculum plan are being met.
- The student provides this college with a detailed course description of the course.
- Written approval is received from the Registrar by the student before taking the course at another college.
- A grade of C or better is earned in the course.

Note: The college does not automatically approve courses to be taken at another college. Request forms and additional information are available in the Registrar's office.

Academic Standing

A student's academic standing indicates progress towards a degree. A minimum over-all average grade is required to continue from one semester to another. There are three categories of academic standing. These are described below.

Good Standing: Good standing is defined as follows:

- A QPA of 1.50 after attempting one to nineteen credit hours
- A QPA of 1.75 after attempting twenty to thirty-six credit hours
- A QPA of 1.90 after attempting thirty-seven to fifty-four credit hours
- A QPA of 2.00 after attempting fifty-five or more credit hours.

Probation: Probation is a warning that a student must show academic improvement in order to maintain enrollment within a program. Probation is a written warning from the Dean of Student Services. This letter states that students on probation must consult with a counselor or their faculty advisor and plan a course of studies to improve grades. Upon attaining grades of good standing, probationary status is removed. Probation status is defined as follows:

- A QPA below 1.50 after attempting one to nineteen credit hours
- A QPA below 1.75 after attempting twenty to thirty-six credit hours
- A QPA below 1.90 after attempting thirty-seven to fifty-four credit hours
- A QPA below 2.00 after attempting fifty-five or more credit hours.

Suspension: Suspension automatically drops a student from the college rolls and denies the student's eligibility to return in the following semester. Suspended students are informed in writing by the Dean of Student Services. Academic Suspension is assigned as follows:

- A QPA less than 1.00 after attempting one to nineteen credit hours
- A QPA less than 1.50 after attempting twenty to thirty-six credit hours
- A QPA less than 1.75 after attempting thirty-seven to fifty-four credit hours
- A QPA below 1.90 after attempting fifty-five or more credit hours; but less than nine credit hours beyond the total required in the student's curriculum
- A QPA below 2.00 after attempting nine credit hours beyond the total required in the student's curriculum.

Students under suspension from the Division of Continuing Education & Community Services are suspended from degree status, but may continue to take courses in the division and apply for readmission to degree status by raising their QPA's.

Note: Suspended students may lose their eligibility to receive veterans' benefits or financial aid until they have returned to a matriculated, good standing status.

Removal From Suspension

Students who are suspended may raise their QPA and qualify for removal from suspension in two general ways:

- By satisfactorily repeating failed courses at NECC which automatically raises a QPA
- By satisfactorily completing courses taken during the evening or summer sessions of the Division of Continuing Education & Community Services.

Additional information on how to be removed from suspension can be obtained from the Division of Continuing Education office, the Dean of Student Services or a college counselor.

Grading System

All grading is done according to a system in which a letter represents the quality of the work done by a student; i.e., A represents excellent work, etc. Grades are distributed at the end of

each semester by mail.

Each student has a Quality Point Average (QPA) which is determined by dividing the number of credit hours attempted into the number of quality points earned. In order to accomplish this each letter grade is given a numerical value on a scale of 0 – 4. These are called Quality Points. The numerical values assigned are:

Grade	QP Value	Numeric Range/Comment
A	4.00	93-100
A–	3.70	90-92
B+	3.30	87-89
B	3.00	83-86
B–	2.70	80-82
C+	2.30	77-79
C	2.00	73-76
C–	1.70	70-72
D+	1.30	67-69
D	1.00	60-66
F	0.00	59 or less; failure; no credit earned
F/NP	0.00	Failure due to non-participation
FW	0.00	Failure due to withdrawal from course
P	0.00	Pass; credit earned
NC	0.00	No credit earned
I	0.00	Incomplete
W	0.00	Withdrawal from course
NW	0.00	Withdrawal via non-participation
WF	0.00	Withdrawn failure
WP	0.00	Withdrawn passing
NG	0.00	No grade submitted by instructor
AU	0.00	Audit; no credits earned

QPA Computation Example:

<u>Course</u>	<u>Credits</u>	<u>Grade</u>	<u>Credit x Grade</u>		
English Composition I	3	A	4 x 3	=	12
Civil Rights and Liberties	3	P	0 x 0	=	0
Introductory French	3	C	2 x 3	=	6
Zoology	4	A	4 x 4	=	16
Introduction to Outdoor Education	3	B	3 x 3	=	9
Statistics	3	D	1 x 3	=	3
			16*		46**

*Credits ** Quality Points

A total of 16 credits divided into a total of 46 quality points earned equals a 2.87 QPA for the semester.

The QPA is also cumulative. Each semester a cumulative QPA is computed by dividing the total number of credits attempted in all semesters at the college into the total number of quality points earned in all semesters at the college. (One exception to this is for those students who have transferred from one program at the college into another. In that instance, those courses which have not been applied to the new program are not considered when determining the QPA.)

Attempted credit hours include credit hours with a letter grade of A, A–, B+, B, B–, C+, C, C–, D+, D, F, FW and F/NP. Grades of P, NC, I, W, NW, WF, WP, NG and AU are not included in the attempted credit hours. When a course is repeated the higher of the two grades will be

computed in the QPA; only the credit hours for the higher grade will be included in the cumulative total of attempted hours. The transcript will record each time the course has been taken. (Refer to Repeating a Course in this section of the catalog for further details.)

Incomplete Grades

Students may receive a temporary grade of Incomplete (I) from instructors when all work in a course is not satisfactorily completed and, in the judgment of the instructor, completion of the assigned tasks would allow the student to earn a passing grade in the course. If the instructor assigns an I, a Documentation of Incomplete Grades form must be completed and placed in the student's folder maintained by the Registrar. This will clearly outline the work to be completed and the time limit. An instructor may change an I to a letter grade (other than a W grade) any time after it is assigned.

Instructors may accept late course work only when, in their judgment, there are acceptable reasons to justify such a delay. If a final examination is missed because of student inaction, as opposed to a cancellation of class or instructor inaction, the instructor may allow a make-up if, in the judgment of the instructor, successful completion of the final examination could earn the student a passing grade.

If, for any reason, the instructor has left Northern Essex permanently or for an extended period of time and is unavailable, the division chairperson has the authority to change the grade using the Grade Change Form. The division chairperson's decision is based upon a waiver of any existing documentation of the Incomplete. If documentation of expected work is not available, the division chairperson may use his/her professional judgment to determine work to be completed and the final grade.

Incomplete grades are temporarily not computed in determining the semester and cumulative QPA. Incomplete grades (I) are automatically converted to F (Failure; no credit earned) grades at the end of the next semester, and are computed as F grades in the student's semester and cumulative QPA. The student is expected to take the initiative in seeking to complete course work necessary to change an I to another grade. An I cannot be changed to a W, NW, WP or WF grade by the instructor.

Pass/No Credit Grade Option – Liberal Arts Program

A student enrolled in the Liberal Arts Program who has successfully earned 12 credits or more, may elect to enroll in a course under the Pass/No Credit grade option. The following criteria apply to the NC (no credit earned) grade option:

- Courses taken on Pass/No Credit basis may be used to fulfill the *elective* requirements only of the Liberal Arts degree. All *specific* course requirements must be taken for a letter grade.
- At *no time* may a grade for a course taken on a Pass/No Credit basis be converted to a letter grade.
- All credits earned for courses taken as Pass/No Credit will count towards the total credit hours required for a Liberal Arts degree, but will not be calculated into the student's quality point average.
- No more than 12 credit hours of Pass/No Credit courses may be applied toward the student's degree and no more than one course may be taken on this basis in any one semester.
- Some colleges may not permit the student to use courses taken as Pass/No Credit for transfer purposes. Responsibility for seeking information regarding the transferability of Pass/No Credit courses lies with the student (see 2 above).
- The Pass/No Credit Grade Option form must be *completed* and *submitted* to the Registrar no later than the **sixth** academic day of the semester in which the course is taken.

Approval from the course instructor is not necessary for the Pass/No Credit option. The instructor is, however, notified of your Pass/No Credit option. The Registrar may approve late

applications for the Pass/No Credit option, but in no cases will requests for a Pass/No Credit option be approved after the fifteenth academic day of a semester. Pass/No Credit Grade Option forms are available only in the Registrar's office.

Changing Grades

To alter the final grade of a student, instructors must complete a Change of Grade form which contains the following information:

- Name of student; social security number
- Title of course, section number, semester earned
- Grade originally reported, new grade
- Brief but comprehensive statement of reason for making change; e.g., clerical error, error in computing the grade

Change of Grade forms are available at the Registrar's office. Instructors must submit forms in person.

Mid-Semester Grades

No mid-semester grades are issued at Northern Essex. All students, however, have the right to require written evaluations from their instructors at any time during the semester.

The Registrar's office has a mid-semester grade form available for students who wish to submit them to their instructors.

Student Academic Transcripts

The Registrar's Office maintains permanent transcripts for all students who earn academic credit at the college. If the student successfully completes a program of study at Northern Essex Community College, the name of the degree or certificate earned will be noted on the transcript. Transcripts are also kept for students who earn Continuing Education Units (CEU's).

Transcripts may be reviewed by students upon request, in person or in writing. Students must present an acceptable form of identification, such as a driver's license, college I.D. card, social security card, etc. Transcripts will be released to other parties only if written authorization from the student has been received. Any written request for (or release of) a transcript must contain the student's name, address, date of birth, social security number, and dates of attendance.

Students will receive one free transcript at the end of each semester, which is mailed to them. Additional transcripts cost \$1.00 each.

All courses taken at Northern Essex Community College are recorded as a single permanent record. Academic credits earned for courses completed either through the Day Division or the Division of Continuing Education & Community Services may be applied to fulfill program and degree requirements. Additional information about transcripts and permanent records is outlined as appropriate throughout this section of the catalog.

Honors

Each semester students are appointed to the Dean's List for Academic Honors if they fulfill the following requirements:

- They are candidates for a degree.
- They are carrying 12 or more credit hours within the semester.
- They attain a quality point average of 3.00 or higher within the semester.

Graduation Requirements

Northern Essex Community College awards Associate Degrees in Arts and Sciences, and Certificates to all qualified students at commencement exercises for each class. In order to receive this award, students must meet the following criteria:

- Completion of all required courses in a curriculum with a passing letter grade, or with the minimum letter grade specified for that course.
- Completion of the number of credit hours prescribed by a particular curriculum.
- Completion of final year of course work and a minimum of 24 credit hours of course work at NECC in order to qualify for a degree, and a minimum of 12 credits in classroom work to qualify for a certificate.
- Attainment of a cumulative quality point average (QPA) of 2.00 or higher.
- Completion of the petition for graduation prior to deadline date as prescribed in the Academic Calendar.
- Payment of all financial obligations at the college.

High honors are awarded during commencement to all students with a cumulative quality point average of 3.50 or higher. Honors are awarded during commencement to all students with a cumulative quality point average from 3.00 to 3.49 inclusive.

Attendance and Non-Participation

Students are expected to attend each meeting of each class in which they are enrolled. The class instructor has full and final authority to decide whether a student is permitted to make up work missed through absence, and on what terms. Students should ask each of their instructors about their respective attendance policies.

Faculty have the academic authority to remove students from their class for non-attendance or non-participation. A non-participating (NP) student is one who, because of absences, missed quizzes, tests or papers, or inappropriate classroom behavior has fallen behind the work of the class to such a degree that the instructor feels the student is not likely to attain a passing grade. In most cases, circumstances would indicate to the teacher that the student has dropped the course but neglected to drop it officially.

When students are removed from a class due to non-participation (NP), a grade of NW (Withdrawal via non-participation) or F/NP (Failure due to non-participation) will be assigned and recorded on their transcripts. Students who are NP'd will receive a letter from the Registrar along with instructions on reinstatement procedures.

Withdrawing from College

Any Day Division student who wishes to withdraw from the college must complete a Withdrawal Form which can be obtained in the Registrar's office. If a student leaves the college without completing a withdrawal form, the transcript will record a WF grade for each course. The following withdrawal from the college periods are in effect at Northern Essex:

- Between day one and forty-five, an automatic W grade is assigned and appropriate withdrawal from college notation made to the student academic record.
- Between day forty-six and end of the semester, the student must have an exit interview with each of his/her instructors and be assigned a WP or WF withdrawal grade by the instructor. Failure to have an exit interview and complete a Withdrawal From the College form will result in the student automatically receiving WF grades. The grade received will appear on the student's academic record.

A faculty member may formally request that a retroactive W grade be issued to a student who withdraws from college during the WF period for a course currently in progress. The faculty member must receive approval from his/her Division chairperson and the Dean of Academic Affairs. The Dean of Academic Affairs will then forward the approval (if granted) to the Registrar for implementation.

Note: If you withdraw from college you will not be eligible to register for courses during the upcoming semester. You must reapply for admission and will receive

instructions on how to register after you have been readmitted.

Students in the Division of Continuing Education & Community Services do not have to withdraw from the college if they discontinue their studies.

Retroactive Course Withdrawals

The Dean of Academic Affairs is responsible for approving any retroactive course drops in a prior semester, and any retroactive withdrawal from college which affects an earned letter grade A through F.

In order to apply for a retroactive course drop or withdrawal, students must complete a Retroactive Withdrawal Petition available in the Registrar's Office. The Registrar will review the request, prepare supporting documentation if appropriate, and forward the petition to the Dean of Academic Affairs for consideration. If approved, the action will result in a W grade appearing on the transcript for the course(s) in the prior semester, with W grade(s) dated as of the forty-fifth academic class day of that semester.

Academic Structure

Under the leadership of the Dean of Academic Affairs, programs of study at Northern Essex Community College are offered through the cooperative efforts of six academic divisions, each one directed by a division chairperson. The divisions are dedicated to academic excellence, diversity, and growth and development.

Five divisions administer the associate degree and certificate programs of study offered at Northern Essex: the Division of Business; the Division of Humanities and Communication; the Division of Human Services and Health Professions; the Division of Mathematics, Science and Technology; and the Division of Social Sciences.

The sixth academic Division, the Division of Instructional Development, is a multi-purpose, service-oriented division which assists students to assess and improve academic skills.

Associate Degree Programs Certificate Programs

Program Formats

The following associate degree and certificate program formats indicate the recommended (and in some cases required) sequence of courses which will lead to completion of associate degree programs in four academic semesters and completion of certificate programs in the number of semesters specified in individual program formats.

Additional formats exist for the part time student and for those with transfer or life experience credit.

Note: We encourage students to contact their advisor for help in setting up a sequence of courses that takes into consideration their unique circumstances.

Transfer Programs

The programs of study at Northern Essex formatted specifically for the student who plans to transfer to a four-year college or university after graduation are Liberal Arts, Business Education, Business Transfer and Engineering Science. These programs are parallel to the first two years of similar programs in most public and private senior colleges throughout the country, and provide a solid basis for transfer with advanced standing.

Career Programs

The intent of career programs at Northern Essex is to provide the theory and technical or professional skills students need to qualify for jobs immediately after graduation. Career programs are offered in the arts, business, technological fields, office and business education, the human services and the health professions. Many of these programs have built-in practicum experiences, others may be supplemented with cooperative education courses for valuable on-the-job training.

Career Program Transfer

Although career program courses are not specifically designed for transfer to a senior institution, they do have transfer potential. Many Northern Essex students in career programs have been accepted at senior colleges related to their career fields.

Accounting

The associate in science degree program in Accounting provides a basic core of business courses which introduces students to a broad variety of areas within the field of business and prepares them to select that particular phase of specialization which best suits their needs, abilities and interests. The Accounting specialization is designed to prepare students to enter business, industry or government in the specific field of accounting. The demand for trained accountants has increased substantially with the growth and complexity of business and government. Employment projections have typically indicated that accountants are among those who are in high demand and well paid. Many of the courses in the curriculum may be transferred to a four-year college of business administration. 64 credit hours of work are required for graduation.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
AC6601	Introductory Accounting I	4	AC6602	Introductory Accounting II*	4
	Mathematics (see Math Chart)	3		Mathematics (see Math Chart)	3
MK6678	Principles of Marketing	3	EN8011	Speech	3
SO3321	Introduction to Sociology OR		PS1101	Introduction to Psychology OR	
PS1101	Introduction to Psychology	3	SO3321	Introduction to Sociology	3
		16			16
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
AC6683	Computerized Accounting Systems	3	EC3652	Survey of Economics***	3
LW6651	Business Law I	3	MG6666	Principles of Management	3
AC6651	Intermediate Accounting I*	4	AC6652	Intermediate Accounting II	4
AC6671	Cost Accounting	3	AC6682	Tax Accounting	3
SC5011	Energy, Environment & Future**	3	FI3652	Business Finance	3
		16			16

* Prerequisite: A grade of C or better in AC6601 Introductory Accounting I.
 ** Another science course may be elected in place of this requirement.
 *** EC3322 Micro Economics may be substituted.



A Northern Essex job-site class.

Banking

The associate in science degree program in Banking has been developed by the college in conjunction with the Educational Committee of the Merrimack Valley Chapter, American Institute of Banking (AIB). This program is designed primarily for those presently employed in banking. The courses parallel those offered by the AIB, and students are able to work towards AIB certification as they complete associate degree requirements. The program provides the student with a broad academic background and the fundamentals of banking and business management skills. 62 credit hours of work are required for graduation.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
AC6601	Introductory Accounting I	4	PS1101	Introduction to Psychology OR	
	Mathematics (see Math Chart)	3	SO3321	Introduction to Sociology	3
EC3322	Micro Economics	3	EN8011	Speech	3
BK6601	Principles of Banking	3	BK6611	Money and Banking	3
		16	AC6602	Introductory Accounting II	4
					16
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
LW6651	Business Law I	3	LW6652	Business Law II	3
MG6666	Principles of Management	3	BK6614	Commercial Bank Management	3
	Banking Elective*	3		Banking Elective*	3
	Banking Elective*	3		Liberal Arts Elective	3
	Liberal Arts Elective	3		Liberal Arts Elective	3
		15			15

* Suggested Banking Electives for students concentrating in **Commercial Lending**: BK6624 Intro to Commercial Lending, BK6651 Analyzing Financial Statements, BK6623 Consumer Lending, BK6652 Law & Banking Principles, BK6654 Law & Banking Applications, BK6621 Corporate Banking: A Practical Approach to Lending.

Suggested Banking Electives for students concentrating in **Retail Banking**: BK6623 Consumer Lending, BK6653 Marketing for Bankers, BK6622 Real Estate Finance, BK6652 Law & Banking Principles, BK6654 Law & Banking Applications, BK6666 Retail Banking.

Banking Studies

The certificate program in Banking Studies (currently offered in the Division of Continuing Education & Community Services only) has been developed by the college in conjunction with the Merrimack Valley Chapter, American Institute of Banking (AIB). The program is designed primarily for those presently employed in banking and is intended for students who wish to complete specialized courses in banking in a short period of time. All courses in the certificate program in Banking Studies may be transferred into the associate degree program in Banking. 30 credit hours are required for the certificate.

REQUIRED COURSES		CREDITS
BK6601	Principles of Banking	3
BK6623	Consumer Lending	3
BK6622	Real Estate Finance	3
BK6611	Money and Banking	3
BK6652	Law and Banking Principles	3
BK6614	Commercial Bank Management	3
BK6624	Introduction to Commercial Lending	3
BK6654	Law & Banking Applications	3
BK6653	Marketing for Bankers	3
	Liberal Arts Elective	3

Business Education

The associate in science degree program in Business Education provides the student with the opportunity to acquire not only high-level business and secretarial skills, but the possibility of transferring to a four-year program at a senior institution. Students may transfer the courses listed towards a Bachelor of Business Education degree in order to prepare for a career as a teacher of business subjects, or towards a Bachelor of Office Administration degree in order to prepare for excellent supervisory or management positions in the business world. 62 or 63 credit hours of work are required for graduation.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
	Business Elective	3		Shorthand*	3
	Shorthand*	3		Typewriting II, III or IV**	3
	Typewriting I, II or III**	3	PS1101	Introduction to Psychology	3
HI9901	Western Civilization I	3	HI9902	Western Civilization II	3
		15			15
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
	Shorthand* OR			Shorthand* OR	
	Secretarial Science Elective***	3		Secretarial Science Elective***	3
SL6661	Office Administration I	3	SL6665	Essentials of Office Management	3
	Natural Science Elective	3/4	AC6602	Introductory Accounting II	4
AC6601	Introductory Accounting I	4		Speech or Literature	3
	Typewriting III OR			Liberal Arts Elective	3
	Secretarial Science Elective***	3			16
		16/17			

* Refer to Executive Secretarial curriculum for Shorthand Chart.

** Choose appropriate course after consultation with departmental advisor.

*** Secretarial Science Electives are listed with the Executive Secretarial curriculum.

Business Management

The associate in science degree program in Business Management provides a basic core of business courses which introduces students to a variety of areas within the field of business. Specific requirements in Business Law, Business Finance, Economics and Principles of Management give students the knowledge and background to make positive contributions in those positions in the business world for which they may be preparing. A wide choice of business management electives allows students maximum flexibility in choosing their programs of study. This program may be preferred by those not wishing to decide upon a specific concentration after completing the first year core program, or by those planning to transfer to a four-year college who want the flexibility of choosing specific business electives for a particular institution. 62 credit hours of work are required for graduation.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
AC6601	Introductory Accounting I	4	AC6602	Introductory Accounting II*	4
	Mathematics (see Math Chart)	3		Mathematics (see Math Chart)	3
MK6678	Principles of Marketing	3	EN8011	Speech	3
SO3321	Introduction to Sociology OR		PS1101	Introduction to Psychology OR	
PS1101	Introduction to Psychology	3	SO3321	Introduction to Sociology	3
		16			16
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
FI3652	Business Finance	3	EC3652	Survey of Economics***	3
LW6651	Business Law I	3	MG6666	Principles of Management	3
	Business Elective**	3		Business Elective**	3
	Business Elective**	3		Business Elective**	3
	Elective	3	SC5011	Energy/Environment & Future ****	3
		15			15

* Prerequisite: A grade of C or better in Introductory Accounting I.

** Business Management Electives available in the Day Division and the Division of Continuing Education & Community Services: AC6651 Intermediate Accounting I, AC6652 Intermediate Accounting II, MK6650 Retailing, MK6679 Advertising, MK6681 Salesmanship, AC6682 Tax Accounting, AC6671 Cost Accounting, LW6652 Business Law II, FI6663 Principles of Real Estate, CT6633 Introduction to Data Processing with BASIC, CO4401 Cooperative Education I, EC3322 Micro Economics, MG6676 Personnel Management, MG6690 Introduction to Management Information Systems.

Business Management electives available in the Division of Continuing Education & Community Services only: All courses in the Banking and Materials Management programs.




Specific courses in the Office Administration program may be elected only with the expressed approval of the Department and Division chairpersons.


*** EC3322 Micro Economics may be substituted.

**** Another science course may be selected in place of this requirement.

FIELD EXPERIENCE PROGRAM

Students participating in the Field Experience Program will be available for employment after completing their first year of academic requirements. This six-month work experience will allow students to increase knowledge in their chosen career while providing employers with qualified employees to fill entry level positions.

STUDENT A*				STUDENT B*			
	Fall	Spring	Summer		Fall	Spring	Summer
First Year	School	School		First Year	School	School	Vacation**
Second Year		School	Vacation**	Second Year	School		*** Vacation
Third Year	School	Graduation January 19		Third Year	School	Graduation January 19	

Field Experience Work Team 

* The Field Experience Rotation Cycle will be determined by the Job Developer.

** Possible employment opportunities will be available through the Cooperative Education Office.

*** Field Experience/Summer Vacation

Business Management: Data Processing Concentration

The associate in science degree program in Business Management with Data Processing Concentration provides a program of study which combines broadly based academic courses with a concentration of specific business administration courses together with a sequence of courses in the field of computer technology. Students will learn to program in several languages. Most computer courses include laboratory periods where the student receives hands-on computer time. The program is designed to provide career-oriented graduates with the computer background demanded by today's business community and the foundation necessary to appreciate the role of data processing in modern business. 67 credit hours of work are required for graduation.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
AC6601	Introductory Accounting I	4	AC6602	Introductory Accounting II*	4
	Mathematics (see Math Chart)	3		Mathematics (see Math Chart)	3
MK6678	Principles of Marketing	3		Programming Elective**	4
CT6633	Introduction Data Processing/BASIC	4	PS1101	Introduction to Psychology OR	
TW6610	Keyboarding	1	SO3321	Introduction to Sociology	3
		18			17
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
FI3652	Business Finance	3	EC3652	Survey of Economics***	3
LW6651	Business Law I	3	MG6666	Principles of Management	3
CT6652	COBOL Programming	4	EN8011	Speech	3
	Elective	3	CT6676	Bus. Sys. Analysis & Design	4
PS1101	Introduction to Psychology OR		SC5011	Energy/Environment & Future****	3
SC3321	Introduction to Sociology	3			16
		16			

* Prerequisite: A grade of C or better in AC6601 Introductory Accounting I.

** CT6611 RPG Programming, CT6638 Basic Programming with Business Applications, or other programming language recommended.

*** EC3322 Micro Economics may be substituted.

**** Another Science may be selected in place of this requirement.

Business Management: Materials Management Concentration

The associate in science degree program in Business Management with Materials Management Concentration offers a program of study which includes a basic core of liberal arts and business administration courses together with a cluster of specialized courses in materials management. The program is designed for people who wish to matriculate in a field which is rapidly emerging as an interesting and lucrative professional area of specialization with expanding job opportunities, not only on the entry level, but also for those interested in supervisory and/or managerial positions. 65/66 credit hours of work are required for graduation.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
AC6601	Introductory Accounting I	4	AC6602	Introductory Accounting II*	4
	Mathematics (see Math Chart)	3		Mathematics (see Math Chart)	3
MG7701	Principles of Materials Management	3	MG7705	Master Planning	3
SO3321	Introduction to Sociology OR		PS1101	Introduction to Psychology OR	
PS1101	Introduction to Psychology	3	SO3321	Introduction to Sociology	3
		16			16
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
MG6654	Purchasing I	3	MG6655	Purchasing II	3
MG6690	Management Information Systems	3	EC3322	Micro Economics	3
EN8011	Speech	3		Natural Science	3/4
MG7703	Capacity Management	3	CT6630	Introduction to Personal Computers	3
MG7706	Material Requirements Planning	3	MG7702	Production Activity Control	3
		15	MG7704	Inventory Management	3
					18/19

*Prerequisite: A grade of C or better in AC6601 Introductory Accounting I.

Business Management: Hotel & Restaurant Management Concentration

The associate in science degree program in Business Management with a concentration in Hotel and Restaurant Management offers a program of study in liberal arts and in general and specialized business courses, as well as a sequence of six courses in hotel and restaurant management. The growth of the tourism industry, paired with the growth and development of the hotel and restaurant industry in the Merrimack Valley area has led to increasing demands for hospitality facilities. This program offers students the education and the field experience needed to prepare for the employment opportunities available in this expanding field. 61 credit hours of work are required for graduation.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
AC6601	Introductory Accounting I	4	AC6602	Introductory Accounting II*	4
	Mathematics (see Math Chart)	3		Mathematics (see Math Chart)	3
MK6678	Principles of Marketing	3	PS1101	Introduction to Psychology OR	
HR6610	Introduction to Hospitality Management*	3	SO3321	Introduction to Sociology	3
		16	HR6620	Hotel and Motel Management*	3
					16
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
HR6630	Food and Beverage Management*	3	MG6666	Principles of Management	3
HR6635	Front Office Procedures*	3	HR6640	Hotel and Restaurant Law*	3
CO4401	Cooperative Education I	3	HR6645	Hospitality Seminar*	2
EN8011	Speech	3	CO4402	Cooperative Education II	3
PS1101	Introduction to Psychology OR			Elective	3
SO3321	Introduction to Sociology	3			14
		15			

* Those who intend to transfer must consult with their advisor before taking this program.

Business Management: Real Estate Concentration

The associate in science degree program in Business Management with a concentration in Real Estate offers a program of study in liberal arts, general and specialized business courses and a sequence of courses in real estate. Graduates of the program will be prepared to take the Massachusetts Real Estate License Examination as either a salesperson or a broker. Career opportunities are prevalent in many specialized areas of the real estate field such as property management, property appraisal, commercial sales and rentals, residential sales and rentals, and personal property investment. 62 credit hours of work are required for graduation.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
AC6601	Introductory Accounting I	4	AC6602	Introductory Accounting II*	4
	Mathematics (see Math Chart)	3		Mathematics (see Math Chart)	3
MK6678	Principles of Marketing	3	FI6663	Principles of Real Estate	4
SO3321	Introduction to Sociology OR		LW6651	Business Law I	3
PS1101	Introduction to Psychology	3			16
		16			
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
BK6622	Real Estate Finance	3	EC3652	Survey of Economics***	3
FI3752	Business Finance	3	LW6630	Business Real Estate Law	3
MG6666	Principles of Management	3	FI6670	Real Estate Evaluation	3
PS1101	Introduction to Psychology OR		EN8011	Speech	3
SC3321	Introduction to Sociology	3		Elective****	3
SC5011	Energy/Environment & Future**	3			16
		16			

* Prerequisite: A grade of C or better in AC6601 Introductory Accounting I.

** Another science course may be selected in place of this requirement.

*** EC3322 Micro Economics may be submitted.

**** Hands-on training component; work experience.

Business Management: Retail Concentration

The associate in science degree program in Business Management with a concentration in Retailing offers a program of study which combines broadly based academic courses with a concentration of business courses and practical experience in retailing. This program will give the student a basic understanding of marketing strategy, selling techniques and product advertising. Retailing is a specific career field which offers an ever-expanding opportunity for graduates. Many major retailing centers and merchandising marts in the geographic area served by the college provide employment opportunities for students and graduates for positions as management trainees, buyer trainees, and sales personnel in retail stores and credit offices. An integral part of the program is a 6-credit Retailing Cooperative Education work experience designed to give the student an opportunity to integrate theoretical classroom knowledge with practical on-the-job experience. 62 credit hours of work are required for graduation.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
AC6601	Introductory Accounting I	4	AC6602	Introductory Accounting II*	4
	Mathematics (see Math Chart)	3		Mathematics (see Math Chart)	3
MK6678	Principles of Marketing	3	MK6680	Retailing	3
SO3321	Introduction to Sociology OR		SO3321	Introduction to Sociology OR	
PS1101	Introduction to Psychology	3	PS1101	Introduction to Psychology	3
		16			16
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
FI3652	Business Finance	3	EC3652	Survey of Economics**	3
LW6651	Business Law I	3	MG6666	Principles of Management	3
MK6679	Advertising	3	MK6681	Salesmanship	3
CO4401	Cooperative Education I	3	C04402	Cooperative Education II	3
EN8011	Speech	3	SC5011	Energy/Environment & Future***	3
		15			15

* Prerequisite: A grade of C or better in AC6601 Introductory Accounting I.
** EC3322 Micro Economics may be substituted.
*** Another science may be selected in place of this requirement.

Business Transfer

The associate in science degree program in Business Transfer is designed for students planning to transfer to a four-year institution after completing the associate degree program. It provides study of basic liberal arts courses with transferable courses in business administration to provide a strong background for further study towards the bachelor's degree. 64 credit hours of work are required for graduation.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
AC6601	Introductory Accounting I	4	AC6602	Introductory Accounting II*	4
	Mathematics (see Math Chart)	3		Mathematics (see Math Chart)	3
MK6678	Principles of Marketing	3	EN8011	Speech	3
SO3321	Introduction to Sociology OR		PS1101	Introduction to Psychology OR	
PS1101	Introduction to Psychology	3	SO3321	Introduction to Sociology	3
		16			16
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
EC3322	Micro Economics	3	EC3323	Macro Economics	3
	Natural Science	4		Natural Science	4
	Elective	3		Elective	3
	Elective	3		Elective	3
	Elective	3		Elective	3
		16			16

Natural Science Requirement: Two 4-credit courses in natural science are recommended. In some instances a total of nine credits in 3-credit science courses may be accepted with Divisional approval.

Mathematics Requirement: Since acceptable transfer courses vary among four-year colleges, students should choose courses in accordance with the specific requirement of the college to which they are seeking admission. It may be necessary for some students to take more than the required two courses in mathematics since courses in Calculus for Business I and II are required for admission by some colleges.

Electives: A wide variety of electives is available to fill the requirements of specific colleges in regard to transfer credits. Students are advised to contact the college to which they are seeking transfer to determine courses that should be taken at Northern Essex Community College. Recommended in many instances would be courses in history and government, humanities and additional courses in mathematics. Many four-year schools will also accept additional courses in Business Administration to satisfy their general elective requirements. Co-Op I and II not a transferable elective.

* Prerequisite: A grade of C or better in AC6601 Introductory Accounting I.

Civil Technology

The one-year certificate program in Civil Technology provides students with theoretical and practical training in the basic technical skills needed for entry-level jobs as technicians in the surveying and drafting areas of the construction industry. Employment opportunities are in private consulting firms, construction companies, and public works agencies. 24/26 credit hours of work are required for the certificate.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
	Math Elective*	3/4	CE6602	Surveying II	4
ET6601	Engineering Design Graphics	2	CE6612	Drawing for Civil Technology	1
CE6601	Surveying I	4	CE6625	Civil Eng. Computing Applications	4
CE6620	Overview of Civil Engineering	3		Math Elective OR	
		12/13		Elective	3/4
					12/13

* Math Elective: Minimum requirement is Intermediate Algebra in the first semester and College Algebra and Trigonometry in the second semester or College Algebra and Trigonometry in the first semester and an elective of one's choice in the second semester.

Computer-Aided Drafting

The thirty-week certificate program in Computer Aided Drafting (CAD) is designed to give students a thorough background in engineering drafting, experience in the use of a CAD system, and knowledge of how CAD fits into Computer Integrated Manufacturing. 27 to 28 credit hours of work are required for the certificate. **Program Prerequisite:** Two years of high school algebra or equivalent.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
ET6600	Engineering Drafting	3	CT6672	Computer Aided Drafting	3
CT6630	Introduction to Personal Computers OR	3	EN4401	English Composition I	3
CT6633	Introduction to Data Processing/BASIC	4		Elective***	3/4
MA5650	Technical Mathematics* OR	4		Elective***	3/4
MA5621	College Algebra & Trigonometry	4			12/13/14
CT6670	Introduction to CAD/CAM	3			
TW6610	Keyboarding for Information Processing**	1			
		13/14/15			

* Students with a more advanced math background may substitute appropriate courses.

** For those without strong typing skills.

*** Recommended alternatives for electives: FA7096 Introduction to Graphic Design, FA7098 Illustration, FA7099 Advanced Graphic Design: Desktop Publishing, CT6601 Fundamentals of Digital Logic, an advanced math, or CT6682 Computer Applications in Engineering and Technology.

Computer Maintenance Technology

The associate in science degree program in Computer Maintenance Technology is designed as a career program to train students for positions as technicians skilled in digital computer software and hardware. Students concentrate on programming in Assembly language and higher level languages, and on analyzing and troubleshooting electronic circuits and systems. Laboratories emphasize hands-on experience with up-to-date computers and electronic instruments. 68/69 credit hours of work are required for graduation. **Program Prerequisite:** Two years of high school algebra or equivalent.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
MA5621	College Algebra & Trigonometry	4	MA5622	Advanced Algebra & Trigonometry	4
EN4401	English Composition I	3	ET6670	Electronic Circuits I	4
ET6111	Introduction to Electric Circuits	4	CT6601	Fundamentals of Digital Logic	3
CT6682	Computer Appl. in Engineering & Technology	4	ET6603	Digital Logic Laboratory	1
		15	EN4402	English Composition II	3
				Humanities/Social Science Elective	3
					18
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
ET6671	Electronic Circuits II	3	CT6683	Computer System Troubleshooting	4
PI5621	Applied Physics I	4	ET6642	Robotics II	3
	Technical Elective*	3/4	ET6682	Digital Electronics	4
ET6690	Microcomputers	4		Humanities/Social Science Elective	3
ET6641	Robotics I	3	PI5622	Applied Physics II	4
		17/18			18

* Technical Electives: MA5690 Calculus I, MA5651 Calculus for Technology, CT6620 Programming I, CT6630 Introduction to Personal Computers, CT6684 C Programming, CT6651 Adv. Assembly Language Programming, CT6670 Intro. CAD/CAM.

Computer Operator Certificate

This one-year certificate is designed to develop skills and knowledge to meet the demands of computer operations, and to prepare students as operator trainees in a number of categories: mini-computer operator, I/O or peripheral device operator, junior computer operator or console computer operator. **No prior knowledge of computers necessary.**

FIRST SEMESTER (Fall)		CREDITS	SECOND SEMESTER (Spring)		CREDITS
CT6633	Intro. to Data Processing w/BASIC	4	CT6641	Operating Systems	4
CT6630	Intro to Personal Computers	3	CT6601	Fundamentals of Digital Logic	3
	Math Elective*	3/4	ET6603	Digital Logic Lab	1
TW6610	Keyboarding I	1	MG6666	Principles of Management	3
		11/12			11

THIRD SEMESTER (Summer or Fall)		CREDITS
CT6643	Computer Operations Experience OR	4
	Co-op Experience	3/4
		3/4

* Acceptable math electives are: MA5500 Intermediate Algebra, MA5667 Introduction to Finite Math, MA5673 Quantitative Methods, MA5506 Statistics, MA5621 College Algebra & Trigonometry, MA5622 Advanced Algebra & Trigonometry, any calculus course.

Computer Technology

The associate in science degree program in Computer Technology offers three options which train students in the skills necessary for employment in data processing. In the Business Programming and Science Option, students receive extensive experience writing, keying-in and "debugging" programs on the college's computer systems. Our graduates have entered varied areas of computer technology including systems analysis training programs, programming and data processing management.

Computer Technology: BUSINESS PROGRAMMING OPTION

Develops skills based on a strong background in mathematics, accounting and communications. Students wishing to transfer to a four-year college after receiving an associate degree in the Business Programming Option should consider a bachelor's degree in Business. 66 to 69 credit hours of work are required for graduation. **Program Prerequisite:** Two years of algebra.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
	Math Elective (see Math Chart)	3/4		Math Elective (see Math Chart)	3/4
CT6620	Computer Programming I	4	CT6640	Data Structures	4
CT6630	Introduction to Personal Computers	3	CT6649	Assembly Language Programming	4
TW6611	Keyboarding II*	1		Elective	3
		14/15			17/18
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
MA5506	Statistics	3	CT6653	Advanced COBOL	4
CT6652	COBOL Programming	4	CT6676	Business Systems Analysis & Design	4
AC6601	Introductory Accounting I	4	AC6602	Introductory Accounting II	4
	Technical Elective**	3/4		Humanities Elective	3
	Social Science/Humanities Elective	3		Social Science Elective	3
		17/18			18

* Proficiency required for Keyboarding II.

** Technical electives include upper level math courses, but particularly appropriate would be any offering in Computer Science or Business Administration.

Computer Technology: COMPUTER OPERATIONS OPTION

The Computer Operations option is a career-oriented degree program aimed at preparing students for careers in computer operations and operation management. The program includes training in software, hardware and computer operations. This program requires at least 61 credits. Technical and math credits must total 18. No prior knowledge of computers necessary. Required programs are presented in two-year and three-year models.

TWO-YEAR MODEL

FIRST SEMESTER (Fall)		CREDITS	SECOND SEMESTER (Spring)		CREDITS
CT6633	Introduction to Data Processing w/BASIC	4	CT6630	Introduction to Personal Computers	3
EN4401	English Composition I	3	EN4402	English Composition II	3
	Math Elective*	3/4		Math Elective*	3/4
TW6610	Keyboarding I (1st 8 weeks)	1	CT6641	Operating Systems	4
TW6611	Keyboarding II (2nd 8 weeks)	1		Social Science Elective	3
	Elective	3			16/17
		15/16			

THIRD SEMESTER (Fall)		CREDITS	FOURTH SEMESTER (Spring)		CREDITS
CT6643	Computer Operations Experience	4		Programming Elective	4
CT6601	Fundamentals of Digital Logic	3		Technical Elective **	3/4
ET6603	Digital Logic Lab	1		Technical Elective**	3/4
MG6666	Principles of Management	3		Social Science/Humanities Elective	3
	Technical Elective**	3/4			13/14/15
	Humanities Elective	3			
		17/18			

THREE-YEAR MODEL

FIRST SEMESTER (Fall)		CREDITS	SECOND SEMESTER (Spring)		CREDITS
CT6633	Intro to Data Processing w/BASIC	4	CT6630	Introduction to Personal Computers	3
EN4401	English Composition I	3	EN4402	English Composition II	3
	Math Elective*	3/4		Math Elective*	3/4
TW6610	Keyboarding I	1	TW6611	Keyboarding II	1
		11/12			10/11

THIRD SEMESTER (Fall)		CREDITS	FOURTH SEMESTER (Spring)		CREDITS
CT6601	Fundamentals of Digital Logic	3	CT6641	Operating Systems	4
ET6603	Digital Logic Lab	1		Technical Elective**	3/4
	Social Science Elective	3		Humanities Elective	3
	Elective	3			10/11
		10			

FIFTH SEMESTER (Fall)		CREDITS	SIXTH SEMESTER (Spring)		CREDITS
CT6643	Computer Operations Experience	4		Programming Elective	4
	Technical Elective**	3/4		Technical Elective**	3/4
MG6666	Principles of Management	3		Social Science/Humanities Elective	3
		10/11			10/11

* Acceptable math electives are MA5500 Intermediate Algebra, MA5667 Introduction to Finite Math, MA5673 Quantitative Methods, MA5506 Statistics, MA5621 College Algebra & Trigonometry, MA5622 Advanced Algebra & Trigonometry, and a calculus course.

** Technical electives include upper level math courses, any computer technology course, business courses, chemistry, physics, or any offering of the Engineering, Natural Sciences, or Technology departments.

Computer Technology: COMPUTER SCIENCE OPTION

Designed for the student wishing to transfer to a four-year college and major in computer science after receiving the associate degree. This option stresses mathematics, scientific programming and computer hardware as basic to computer science. 69 to 71 credit hours of work are required for graduation. **Program Prerequisite:** Two years of algebra.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
	Math Elective (see Math Chart)	4		Math Elective (see Math Chart)	4
CT6620	Computer Programming I	4	CT6640	Data Structures	4
CT6630	Introduction to Personal Computers	3	CT6649	Assembly Language Programming	4
TW6611	Keyboarding II*	1		Elective	3
		15			18

THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
MA5506	Statistics	3	CT6661	Adv. Computer Systems Programming	4
CT6601	Fundamentals of Digital Logic	3	CT6622	FORTAN Programming	4
ET6603	Digital Logic Lab	1		Technical Elective**	4
CT6651	Advanced Assembly Programming	4		Humanities Elective	3
	Technical Elective**	3		Social Science Elective	3
	Social Science/Humanities Elective	3			18
		18			

* Proficiency required for Keyboarding II.

** Technical electives include upper level math courses, but particularly appropriate would be any offering in Computer Science, Engineering or Electronic Technology (CT or ET courses).

Criminal Justice

The associate in science degree program in Criminal Justice describes and analyzes the various aspects of the criminal justice system. The curriculum is designed to take a systems approach in understanding the crime problem in the United States. The program is structured to prepare the students for professional careers, whether they are pre-service or already working in the criminal justice field. It is recognized that a majority of criminal justice students continue their criminal justice education at four-year institutions. Consequently, the curriculum has a broad, academic orientation, facilitating transfer to four-year institutions. 62 to 65 credit hours of work are required for graduation.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
SO3321	Introduction to Sociology	3		Math Elective*	3/4
GV3314	State & Local Government	3	SO3353	Introduction to Criminology	3
CJ3603	Introduction to Criminal Justice	3	CJ3607	Functions of Police in Modern Society	3
PE2016	Foundations of Health & Fitness	2	CJ3601	Concepts of Criminal Law	3
		14			15/16

THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
EN8011	Speech	3	GV3315	Civil Rights & Liberties	3
PS1101	Introduction to Psychology	3	CJ3608	Introduction to Corrections	3
	Elective**	3	CJ3670	Senior Seminar**** OR	
CJ3667	Crisis Intervention in Criminal Justice System	3	CJ3672	Field Practicum	3
	Natural Science Elective***	3/4		Math/Natural Sci. Elective*/***	3/4
CJ3609	Criminal Court System	3		Elective**	3
		18/19			15/16

* Unacceptable math course: MA5512 Math for Elementary Education.

** Students must choose two humanities electives, in addition to speech, in order to meet the requirements of the Commonwealth Transfer Compact. Courses other than humanities may be selected, but students interested in transferring are advised to check the requirements of the institution to which they seek transfer. Humanities electives should be selected from the following catalog categories: foreign languages, communication, philosophy, art, music, literature, religion and theatre.

*** Natural Science Elective: Courses should be selected from the following catalog categories: biology, chemistry, earth sciences or science.

**** The field practicum will apply to pre-service students and the senior seminar will generally apply to in-service students.

Note: Additional credits in the second, third and fourth semesters are a result of the possibility of the student selecting a four credit elective or requirement.

Dental Assistant

The two-semester certificate program in Dental Assistant is taught in the Dental Clinic/Laboratory and X-ray Room of Greater Lawrence Technical School, Andover, MA, and at the Haverhill campus of the college. The program is accredited by the Commission on Dental Accreditation of the American Dental Association. The curriculum provides the student with knowledge and practical skills required to perform dental assisting functions competently. Ten weeks of practical experience is provided in local dental offices to perfect the student's competence in performing dental assisting functions. Students who successfully pass the Certification for Dental Assistants examination sponsored by the Dental Assisting National Board, Inc. become Certified Dental Assistants. 35 credit hours of work are required for the certificate. **Program Prerequisite:** A high school diploma or equivalent and a personal interview.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
DA0100	Dental Assisting I	5	DA0200	Dental Assisting II	3
DA0105	Dental Clinical I	4	DA0205	Dental Clinical II	1
DA0110	Oral Science I	3	DA0250	Dental Radiology II	1
DA0130	Dental Radiology I	2	DA0245	Oral Science II	1
PS1101	Introduction to Psychology	3	DA0275	Dental Seminar	1
EN4401	English Composition I	3	DA0280	Dental Assisting Practicum	5
		<u>20</u>	BI5510	Human Biology	<u>3</u>
					15

Malpractice Insurance: All Dental Assistant students are required to carry malpractice insurance. The premium is to be paid prior to the beginning of classes.

Health: Dental Assistant students are required to complete a health evaluation prior to beginning the program.

C.P.R. Certification: All Dental Assistant students are required to be certified in Basic Life Support (C.P.R.) prior to their first clinical assignment in the Spring semester. This may be accomplished by participating in C.P.R. instruction by the American Heart Association or the American Red Cross.

Early Childhood Education

The Early Childhood Education program is a career-oriented program which trains students for a professional role in the field of early childhood education. How children grow, develop and learn will become more meaningful through course work, directed observation and through the study of the young child both as an individual and as he/she functions in a variety of group settings. An integral part of this program is, therefore, the practicum placement which allows the student to apply theory and new skills, under guidance and supervision, in a variety of classrooms and educational programs. The program also provides the foundation for further study in the field of Early Childhood Education. This program requires 66/68 credit hours of work for graduation. **Program Prerequisite:** Letters of reference and a personal interview with the Curriculum Coordinator.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
PS1101	Introduction to Psychology	3	PS1151	Child Psychology	3
BI5510	Human Biology/Natural Science Elective	3/4	CC2312	Practicum I	3
CC2230	Early Childhood Education: Theory and Practice	4	ED0402	Teaching Reading Readiness	3
CC2244	Enhancing Creativity in Early Childhood Curriculum	<u>3</u>	EN8011	Natural Science Elective	3/4
		16/17		Speech	<u>3</u>
					18/19
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
CC2353	Practicum II	4	CC2364	Seminar in Early Childhood Education	3
PS2112	Prob. in Early Childhood Humanities Elective*	3	CC2354	Practicum III	4
	Math Requirement**	3	PE2012	First Aid and Safety OR Elective***	3
CC2240	Expressive Learning Activities in Early Childhood Curriculum	<u>3</u>		Elective***	3
		16	CC2260	Math/Science for Early Childhood Curriculum	<u>3</u>
					16

* Humanities electives include the following: foreign languages, philosophy, art, music, literature, religion, theatre.

** Specific math course to be determined by the students in consultation with their advisor.

*** Persons who wish to transfer to other colleges after graduation should elect courses which satisfy the requirements of those colleges and/or the Commonwealth Transfer Compact.

Electronic Technology

The associate in science degree program in Electronic Technology is designed primarily to equip students for employment (often as an engineering assistant) with immediate marketable skills in electronic technology, both analog and digital. This curriculum concentrates on developing complex, interdependent electronic techniques. Heavy emphasis is put on use of state-of-the-art devices and laboratory equipment, and the preparing of complete, analytical laboratory reports. Recently, Bachelor of Engineering Technology programs have been developed nation-wide and the student who plans to continue education at a four-year institution should consider these new programs. 69/70 credit hours of work are required for graduation. **Program Prerequisite:** Two years of algebra; geometry and trigonometry helpful, but not required.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
MA5621	Algebra & Trigonometry	4	MA5622	Advanced Algebra & Trigonometry	4
ET6611	Circuit Analysis I	4	ET6612	Circuit Analysis II	4
CT6682	Computer Applications in Eng. & Tech.	4	EN4402	English Composition II	3
EN4401	English Composition I	3	ET6672	Electronics I	5
		15		Humanities/Social Science Elective	3
					19
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
ET6673	Electronics II	5	PI5622	Applied Physics II	4
CT6601	Fundamentals of Digital Logic	3	ET6690	Microcomputers	4
ET6603	Digital Logic Laboratory	1	ET6684	Communications Circuits	4
PI5621	Applied Physics I	4	ET6682	Digital Electronics	4
	Humanities/Social Science Elective	3			16
MA5670	Calculus for Electronics OR				
MA5690	Calculus I (for transfer students)	3/4			
		19/20			

Technology programs provide extensive hands-on experience.



Engineering Science

The associate in science degree program in Engineering Science is designed to prepare an engineering student for transfer to a four-year college or university. A core curriculum has been developed in cooperation with the American Association for Engineering Education and engineering divisions of several four-year institutions. The core curriculum allows the student an opportunity to explore various engineering fields equipping him/her to choose the field of specialization best suited to his/her interests and abilities. The fields of engineering include chemical, industrial, electrical, civil and mechanical. A strong background in mathematics is required. 68/70 credit hours of work are required for graduation. **Program Prerequisite:** Two years of algebra; geometry; trigonometry; one year of physics or chemistry.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
MA5690	Calculus I	4	MA5692	Calculus II	4
	Chemistry Elective*	4	PI5623	Engineering Physics I	4
ET6601	Engineering Design Graphics	2		Chemistry Elective*	4
	Communications Elective**	3		Elective**	3
		16			18
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
MA5693	Calculus III	4		Elective**	3
PI5624	Engineering Physics II	4		Technical Elective***	3/4
ET6651	Engineering Mechanics I	3	PI5651	Engineering Physics III	4
	Elective**	3		Technical Elective***	4
	Elective**	3/4		Elective**	3
		17/18			17/18

* This elective can be either the Introductory Chemistry sequence (CH5503, CH5504) or the General Chemistry sequence (CH5501, CH5502) depending on the background needs of the student.

** **Statement on Electives:** A minimum of nine semester hours of electives must be taken in humanities or the social sciences. Either EC3322 Micro Economics or EC3323 Macro Economics or both may be used to satisfy part of this requirement. The Communications Elective is considered to be any of the English offerings (courses with an EN prefix). During the first semester, the student should contact the college to which he/she plans to transfer and then select both technical and general electives to fulfill his/her transfer goals. Proposed technical electives from outside the lists below will be considered, but must be approved by the Chairperson, Department of Engineering Science.

*** Suggested Technical Electives for various engineering branches (this list is not to be considered complete):

Civil Engineering: Micro Economics and Macro Economics, Survey I & II, Differential Equations, FORTRAN Programming, Computer Applications in Engineering and Technology, Strength of Materials, Engineering Mechanics II.

Electronic/Electrical Engineering: Micro-Economics and Macro-Economics, Differential Equations, FORTRAN Programming, Computer Applications in Engineering and Technology, Strength of Materials, Fundamentals of Digital Logic, Networks I and II, Engineering Mechanics II.

Mechanical Engineering: Micro-Economics and Macro-Economics, Engineering Mechanics II, Differential Equations, FORTRAN Programming, Computer Applications in Engineering and Technology, Circuit Analysis I and II, Networks I and II, Strength of Materials.

Environmental Engineering: Micro-Economics and Macro-Economics, FORTRAN Programming, Computer Applications in Engineering and Technology, Introductory Biology, Microbiology.

Chemical Engineering: General Chemistry I and II, Special Topics in Chemistry, Micro Economics and Macro-Economics, FORTRAN Programming, Computer Applications in Engineering and Technology.

Executive Secretarial




The associate in science degree program in Executive Secretarial proposes to train students to assume high-level secretarial positions on the administrative and executive levels. The two-year curriculum offers a balanced program of academic and technical courses leading to specialization in the executive secretarial area. The college-educated secretary finds a wide variety of opportunities in every business and in every profession. Several courses will prepare students to seek gainful employment in the modern electronic office by providing opportunities for them to learn skills on several kinds of automated office equipment which integrates the advances of office technology. 60 to 61 credit hours of work are required for graduation.


FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
AC6691	Elements of Accounting I	3	AC6692	Elements of Accounting II	3
	Shorthand*	3		Shorthand*	3
	Typewriting I, II or III**	3		Typewriting II, III or IV**	3
	Liberal Arts Elective	3	PS1101	Introduction to Psychology	3
		15			15
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
	Shorthand* OR			Shorthand* OR	
	Secretarial Science Elective***	3		Secretarial Science Elective***	3
SL6661	Office Administration I	3		Secretarial Science Elective***	3
TW6631	Typewriting III OR		LW6651	Business Law I	3
	Secretarial Science Elective***	3		Speech or Literature	3
	Natural Science Elective	3/4		Liberal Arts Elective	3
	Elective	3			15
		15/16			

- * See Shorthand Chart.
- ** Choose appropriate course after consultation with advisor.
- *** Secretarial Science Electives: TW6632 Typewriting IV, SL6673 Word Processing I, AC6693 Elements of Accounting III, AC6694 Simulation in Accounting, SK6653 Machine Transcription, SL6665 Essentials of Office Management, SL6682 Managerial Communications, MG6690 Introduction to Management Information Systems, SH6611 ABC Shorthand.

FIELD EXPERIENCE PROGRAM

Students participating in the Field Experience Program will be available for employment after completing their first year of academic requirements. This six-month work experience will allow students to increase their knowledge in their chosen career while providing employers with qualified employees to fill entry level positions.

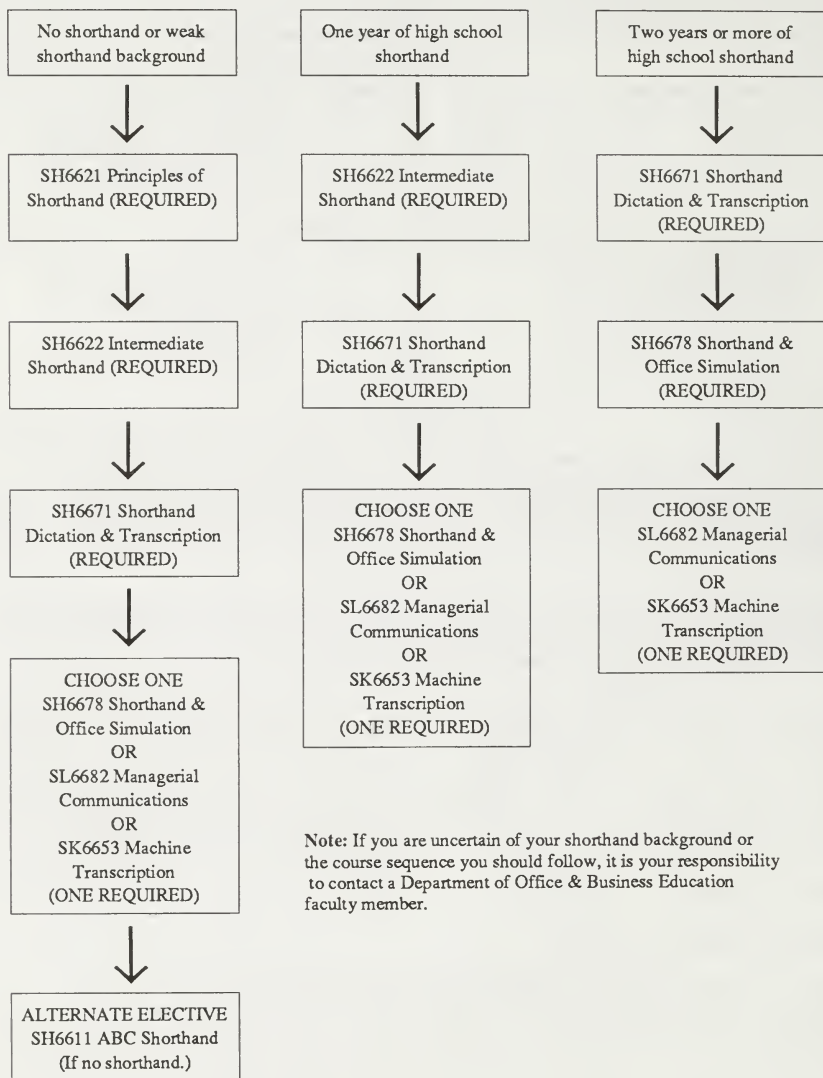
STUDENT A*				STUDENT B*			
	Fall	Spring	Summer		Fall	Spring	Summer
First Year	School	School		First Year	School	School	Vacation**
Second Year		School	Vacation**	Second Year	School		*** Vacation
Third Year	School	Graduation January 19__		Third Year	School	Graduation January 19__	

Field Experience Work Team 

- * The Field Experience Rotation Cycle will be determined by the Job Developer.
- ** Possible employment opportunities will be available through the Cooperative Education Office.
- *** Field Experience/Summer Vacation

Executive Secretarial Shorthand Chart

Shorthand chart for students in Executive Secretarial programs. A minimum of two courses is required for all students except those students beginning their study with SH6621 Principles of Shorthand who must complete a minimum of three courses.



Note: If you are uncertain of your shorthand background or the course sequence you should follow, it is your responsibility to contact a Department of Office & Business Education faculty member.

Executive Secretarial: Machine Transcription Concentration

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
AC6691	Elements of Accounting I	3	AC6692	Elements of Accounting II	3
	Typewriting I, II or III*	3		Typewriting II, III or IV	3
	Liberal Arts Elective	3	PS1101	Introduction to Psychology	3
SH6611	ABC Shorthand	3	SL6682	Managerial Communication	3
		15			15
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
PE2012	First Aid and Safety	3		Speech or Literature	3
	Typewriting III OR			Liberal Arts Elective	3
	Secretarial Science Elective**	3	MR6606	Medical Terminology II	3
MR6605	Medical Terminology I	3	SK6655	Medical Machine Transcription	
	Secretarial Science Elective**	3		for Word Processing	3
	Natural Science Elective***	3/4	SL6680	Medical Office Administration	3
		15/16			15

- * Choose appropriate course after consultation with departmental advisor.
- ** Secretarial Science Electives are listed with the Executive Secretarial curriculum.
- *** Human Biology suggested.

General Business Certificate: Hearing Impaired Students

The one-year certificate program in General Business for Hearing Impaired Students is designed as a short intensive career program specifically for the hearing-impaired. The program provides the skills necessary for immediate entry level job placement. There is intensive concentration in entry level skills of keyboarding, typewriting, word processing, and office procedures. Several credits may be transferred to the associate degree programs in Word Processing Technology and Management or Office Management. 23 credit hours are required for the certificate.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
TW6610	Keyboarding I OR		SL6673	Word Processing I	3
TW6611	Keyboarding II	1	SL6660	General Office Procedures	3
	Typewriting I or II	3	CT6630	Introduction to Personal Computers	3
EN4400	Basic Writing	3	CO4401	Cooperative Education I	3
	Business English Vocabulary Lab	0			12
AC6600	Workshop in Basic Business & Bookkeeping	3			
		10			

General Studies

The associate in arts degree in General Studies is designed to provide a flexible curriculum which combines a core of transfer courses (the program meets the requirements of the Commonwealth Transfer Compact) with an opportunity to explore occupational courses in such career areas as engineering, computer science, management and health professions. It is a practical program for students undecided about career objectives. 34/36 credit hours of work in core requirements plus 3 credits in Liberal Arts electives plus 24 free electives – a total of 61/63 credits are required for graduation.

CORE REQUIREMENTS*: 34/36 Credits	CREDITS
Composition I and II	6
Behavioral Sciences	3
Foreign Languages/Philosophy/Religion/Creative Arts	3
History/Government**	3
Humanities	3
Literature	3
Mathematics***	3/4
Social Science	3
Science	4
Math/Science Elective	3/4

* Corresponds with Commonwealth Transfer Compact requirements.

** It should be noted that two four-year colleges, Salem State and University of Massachusetts at Boston, require Western Civilization I and II for graduation in most programs. Political Science carries government credit.

*** Any math course except the following: MA0020 Basic Mathematics, MA0030 Basic Algebra, MA5512 Mathematics for Elementary Education, MA5513 Mathematics of Finance.

ELECTIVES: 27 Credits	CREDITS
Liberal Arts Electives	3
Free Electives*	24

* May include courses outside the Liberal Arts.

General Studies: Commercial Art Degree Option

The Commercial Art Degree Option has two basic objectives: to teach students skills used in design, layout, reproduction, advertising, and other graphic arts professions; and secondly, to prepare students for professional schools and advanced work in graphic design and advertising. Part-time students may take more than two years to complete this program.

This program offers practical training in the skills needed for entry-level jobs in the commercial design field, an exposure to career possibilities in graphic communication and a chance to develop a number of transferable skills. Courses in this program will also be available as electives to business and technology students – on a space-available basis. An understanding of graphic design and commercial illustration will enrich almost any field of study, provide personal enrichment for our students, and enhance cultural growth in the arts.

FIRST SEMESTER	CREDITS	SECOND SEMESTER	CREDITS
EN4401 English Composition I	3	EN4402 English Composition II	3
FA7030 Drawing I	3	FA7031 Drawing II OR	
FA7080 Color & Design	3	Figure Drawing	3
FA7096 Introductory Graphic Design	3	Elective*	3
HI9901 Western Civilization I	3	FA7097 Intermediate Graphic Design	3
	15	HI9902 Western Civilization II	3
			15

THIRD SEMESTER	CREDITS	FOURTH SEMESTER	CREDITS
MK6679 Advertising	3	Literature	3
Science (or) Math**	3/4	Lab Science	4
PS1101 Introduction to Psychology OR		HU4011 Art, Math & Nature OR Math**	3
SO3324 Cultural Anthropology	3	FA7099 Advanced Graphic Design:	
FA9001 Illustration I	3	Desktop Publishing	3
Elective*	3	Elective*	3
	15/16		16

* Color & Design II, Illustration II, Marketing, Photography, Introduction to Humanities, Phototypesetting, Reproduction Graphics, Graphic Design Internship (Co-Op), Introduction to Music, Painting I & II.

** See math requirements for General Studies Program.

Gerontology

The one-year certificate program in Gerontology is designed to offer a core of Gerontology courses to professionals and paraprofessionals of all ages who wish to upgrade their skills and knowledge in this emerging and challenging field. 32 to 33 credit hours of work are required for the certificate.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
PS6551	Adulthood & Aging	3	SO3356	Psychosocial Aspects of Aging	3
GR6556	Law, Advocacy and Aging	3	GR6562	Practicum II*	4
GR6561	Practicum I*	4	PS1354	Human Relations	3
	Natural Science Elective	3/4		Elective	3
		<u>16/17</u>			<u>16</u>

* In some instances, the Program Coordinator may recommend that a suitable course be substituted for one of the practicums for persons who have had significant, demonstrable experience working with elders. Practicum courses will be limited to students enrolled in the Gerontology program.

Hotel & Restaurant Management

The certificate program in Hotel and Restaurant Management (offered through the Division of Continuing Education only) is comprised of seven courses in the specialized area of Hotel and Restaurant Management. The program is targeted for those who are seeking employment upgrade in their field. Credits earned in the certificate program may be applied toward an associate degree in Business Management with a concentration in Hotel and Restaurant Management. 21/22 credit hours of work are required for the certificate.

MODULE I		CREDITS	MODULE II		CREDITS
HR6610	Introduction to Hospitality Management	3	HR6620	Hotel and Motel Management	3
AC6601	Introductory Accounting I	4	HR6635	Front Office Procedures	3
		<u>7</u>			<u>6</u>
MODULE III		CREDITS	MODULE IV		CREDITS
HR6630	Food and Beverage Management	3	CO4401	Cooperative Education I OR	3
HR6640	Hotel and Restaurant Law	3	HR6645	Hospitality Seminar	2
		<u>6</u>			<u>2/3</u>

Information Management

The one-year certificate program in Information Management is designed as a short, intensive career program for immediate job placement. There is intensive concentration in the technical areas of data processing, word processing and office management. All credits may be transferred to the associate degree programs in Office Administration or Word Processing Technology & Management. 24 to 26 credit hours of work are required for the certificate.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
TW6622	Typewriting II* OR		SL6665	Essentials of Office Management	3
TW6631	Typewriting III*	3	SL6674	Word Processing II	3
MG6690	Introduction to Management Information Systems OR		SL6682	Managerial Communications	3
CT6633	Introduction to Data Processing/BASIC	3/4		Liberal Arts Elective	3/4
SL6673	Word Processing I	3			<u>12/13</u>
SH6611	ABC Shorthand	3			
		<u>12/13</u>			

* Choose appropriate course after consultation with departmental advisor.

Interpreter Training

The associate in science degree program in Interpreter Training is designed to provide students with a broad educational experience based on a balance and diversity of general education, sign language and interpreting courses. Students are provided the opportunity to develop an understanding of the profession of interpreting for deaf and hearing individuals and the knowledge, attitude and skills necessary to function as professional interpreters in a variety of settings. The program also provides for career exploration within the field of deafness and the basic academic preparation for possible transfer to bachelor degree programs. 67 to 69 credit hours of work are required for graduation.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
AL1001	American Sign Language I	4	AL1002	American Sign Language II	4
IN1010	Orientation to Deafness	3	IN1030	Introduction to the Interpreting Field	3
EN4401	English Composition I	3	IN1041	Introduction to Practicum	2
BI5515	Principles of Biology*	4		Behavioral Science Requirement**	3
PH1101	Introduction to Philosophy	3	EN4402	English Composition II	3
		17	BI5510	Human Biology*	3
					18
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
AL2003	American Sign Language III	4	IN2033	Advanced Interpreting	4
IN2029	Interpreting	4	IN2041	Practicum II	3
IN2039	Practicum I	3	PS1355	Deafness: Individual & Society	3
EN5500	Introduction to Language	3	GV3312	Introduction to Political Science	3
EN8011	Speech	3	MA5520	Liberal Arts Math I***	3
		17			16

* Or can be two sequential four-credit science courses (i.e., Introductory Biology: Botany and Introductory Biology: Zoology). This will increase the total credit hours earned to 69.

** Cultural Anthropology, Introduction to Psychology, or Introduction to Sociology.

*** Or Intermediate Algebra or higher.

Interpreter Training Certificate

The certificate program in Interpreter Training is designed to provide the students with an opportunity to develop an understanding of the profession of interpreting for deaf and hearing individuals and the knowledge, attitude and skills necessary to function as professional interpreters in a variety of settings. The program also provides for career exploration within the field of deafness. Credits earned in the certificate program may be applied toward associate degree requirements in Interpreter Training. 37 credit hours of work are required for the certificate. **Program Prerequisite:** The certificate is available only to people who have 32 or more earned college/university liberal arts/general education credit hours.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
AL1001	American Sign Language I	4	AL1002	American Sign Language II	4
IN1010	Orientation to Deafness	3	IN1030	Intro. to the Interpreting Field	3
		7	IN1041	Introduction to Practicum	2
					9
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
AL2003	American Sign Language III	4	IN2033	Advanced Interpreting	4
IN2029	Interpreting	4	IN2041	Practicum II	3
IN2039	Practicum I	3	PS1355	Deafness: Individual & Society	3
		11			10

Liberal Arts

The associate in arts degree in Liberal Arts requires students to complete minimum requirements in the seven specific areas listed below. 44 credit hours of work in core requirements plus 16 credit hours of work in elective courses – a total of 60 credits are required for graduation.

CORE REQUIREMENTS: 44 credits	CREDITS
Composition I and II	6
Behavioral Sciences*	6
Foreign Languages/Philosophy/Religion/Creative Arts**	6
History/Government***	6
Literature****	6
Mathematics*****	6
Natural Science	8

- * All courses offered in Anthropology, Psychology and Sociology.
- ** Art, Dance, Music, Photography, Theatre.
- *** It should be noted that two 4-year colleges, Salem State and University of Massachusetts at Boston, require Western Civilization I and II for graduation in most programs. Political Science carries government credit.
- **** Any course offered by the Department of English which includes the word "literature" anywhere in the course title.
- ***** Any math course except the following: MA0020 Basic Mathematics, MA0030 Basic Algebra, MA0500 Mathematics for Early Childhood Education, MA0501 Developmental Mathematics, MA5512 Mathematics for Elementary Education, MA5513 Mathematics of Finance.

Free Electives: 16 Credits (or more)

Free electives include any course offered by the Departments of English; Foreign Languages; Philosophy & Religion; Creative Arts; History & Government; Psychology, Anthropology and Sociology; Mathematics and Natural Sciences. Students may also take up to 3 credits in the Department of Sport and Leisure Studies and/or* up to 6 credits in courses offered by any other department in the college. (Additional electives in other areas must be approved in advance by the Dean of Academic Affairs and the Liberal Arts chairpersons.)

* Students may take up to 16 credits in courses offered by any other department of the college if they are identified as being enrolled in an approved Liberal Arts Degree Concentration.

Planning Your Liberal Arts Program: In order to help students focus their Liberal Arts studies more effectively and choose courses which meet their individual needs and interests, Northern Essex has developed a number of suggested approaches to the scheduling of courses in the Liberal Arts program. These include Course Concentrations, Degree Concentrations and the Part-Time Studies Program. Students can design their own program of study with help from faculty advisors, with particular attention to specific courses they will need for transfer.



The college's International Studies Program offers a semester abroad.

Liberal Arts Degree Concentrations

Students matriculated in the Liberal Arts program may take up to 16 credits offered by any other department if they are identified as being enrolled in an approved Liberal Arts Degree concentration. The following Degree Concentrations are currently available.

Liberal Arts: Gerontology Degree Concentration

The Liberal Arts degree concentration in Gerontology is a strong liberal arts program with several electives in aging. It is intended for the student who would like to know more about later life either for personal enrichment or to explore working with the elderly as a career choice.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
PS1101	Introduction to Psychology	3	SO3356	Psychosocial Aspects of Aging	3
PS6551	Adulthood & Aging	3	PS1354	Human Relations	3
	History/Government Elective	3		History/Government Elective	3
	Humanities Elective	3		Humanities Elective	3
		<u>15</u>			<u>15</u>
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
	Natural Science Elective	4		Natural Science Elective	4
GR6551	Practicum I	4	GR6562	Practicum II	4
GR6556	Law, Aging & Advocacy	3		Math Elective	3
	Math Elective	3		Literature Elective	3
	Literature Elective	3			<u>14</u>
		<u>17</u>			

Liberal Arts: Physical Education/Recreation Degree Concentration

The Liberal Arts degree concentration in Physical Education and Recreation is offered by the Department of Sport and Leisure Studies and the Liberal Arts divisions. The concentration is designed to meet individual needs and career goals in the broad fields of both recreation and physical education. There is enough built-in flexibility within the concentration to allow students an opportunity to explore the various career alternatives within the whole range of leisure services. Students will also have an opportunity to transfer to Leisure Service programs at the baccalaureate level.

COURSE REQUIREMENTS		CREDITS
PE2001	Introduction to Physical Education	3
PE2016	Foundations of Health & Fitness	2
PE2292	Stress Reduction and Relaxation Techniques	2
		<u>7</u>

Skills*: Elect 2 of the following 1 or 2-credit courses: PE1027 Tennis, PE1031 Weight Training, PE1018 Dance, PE1014 Golf, PE1011 Fly Fishing, PE1050 Racquetball, PE1042 Jogging, PE1008 Canoeing.

Electives: Elect 1 of the following 3 credit courses: FA7094 Dance Composition, PE2007 Camp Counseling, PE2012 First Aid and Safety, FA7091 Dance in Performance.

*Or any other appropriate skills course approved by the Department Chairperson.

Liberal Arts Course Concentrations

Students may select a special course concentration within the Liberal Arts program. Each concentration recommends a two-year sequence of study which fulfills core requirements for graduation, provides a focus for pre-major study, is transferable to a four-year baccalaureate program, and provides some career possibilities. The following course concentrations are currently available.

Liberal Arts: Creative Arts Course Concentration

The Liberal Arts course concentration in Creative Arts allows students to explore their interest in dance, music, theatre or art. Students may select introductory and specialized courses in each of these areas. Drama, dance and musical productions are presented each year, offering an excellent opportunity for practical experience.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
HI9901	Western Civilization I	3	HI9902	Western Civilization II	3
FA7020	Introduction to Creative Arts	3	HU4000	Introduction to Humanities	3
	Art, Dance, Music, Theatre Elective*	3		Art, Dance, Music, Theatre Elective*	3
	Math Requirement** OR			Math Requirement** OR	
	Free Elective***	3		Free Elective***	3
		15			15
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
	Science Elective	4		Science Elective	4
EN8861	Western Literature Before 1600	3	EN8862	Western Literature Since 1600	3
	Behavioral Science Elective	3	SO3324	Cultural Anthropology	3
	Art, Dance, Music, Theatre Elective*	3		Art, Dance, Music, Theatre Elective*	3
	Math Requirement** OR			Math Requirement** OR	
	Free Elective***	3		Free Elective***	3
		16			16

* Students must take at least three credits in each of the following areas:

Dance: Dance Composition; Dance in Performance; Modern Dance, I, II, III and IV; Ballet I, II, III and IV; Jazz I and II.

Theatre: Introduction to Theatre, Acting, Mime, History of Theatre.

Visual Arts: Introduction to Art, Painting, Drawing.

Music: Introduction to Music, History of Jazz, Music Reading.

** Math requirement includes any (MA) math course except MA0020 Basic Mathematics, MA5613 Mathematics of Finance, MA5641 Mathematics of Business, MA5671 Business Statistics, MA0030 Basic Algebra.

*** Free Electives: Includes any course offered by the Departments of English, Foreign Languages, Philosophy, Religion, Creative Arts, History and Government, Behavioral Sciences, Mathematics, Natural Sciences and Business. Students may also take up to 3 credits in the Department of Sport and Leisure Studies and/or up to 6 credits in courses offered by any other department of the college.

Liberal Arts: Dance Course Concentration

The Liberal Arts course concentration in Dance exists to foster a love of movement, to provide greater awareness of one's body, to encourage integration and harmony of mind and potential as experienced in movement, and to provide the background in technique necessary to realize these goals. "As long as man is responsive to the forces of life and the universe, there will be dance." (Margaret H'Doubler)

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
HI9901	Western Civilization I	3	HI9902	Western Civilization II	3
FA7020	Introduction to Creative Arts	3		Dance Elective*	3
	Dance Elective*	3		Math Requirement**	3
	Math Requirement** OR			Free Elective***	3
	Free Elective***	3			15
		15			

THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
EN8861	Western Literature Before 1600	3	EN8862	Western Literature Since 1600	3
	Behavioral Science Elective	3	SO3324	Cultural Anthropology	3
	Dance Elective*	3		Dance Elective*	3
	Math Requirement** OR			Math Requirement** OR	
	Free Elective***	3		Free Elective***	3
	Science Elective****	4		Science Elective****	4
		16			16

* Students must take at least 15 credits in dance: Dance Composition; Dance in Performance; Pedagogy; Repertory; Modern Dance I, II, III, IV; Ballet I, II, III, IV; Jazz I, II. Directed Studies courses are available in Dance History and Ballet in Performance.

** Any math (MA) course except the following: MA0020 Basic Mathematics, MA5613 Mathematics of Finance, MA5641 Mathematics of Business; MA5671 Business Statistics, MA0030 Basic Algebra.

*** Free electives: any course offered by the Departments of English; Foreign Languages, Philosophy and Religion; Creative Arts; History and Government; Behavioral Sciences; Mathematics; Natural Sciences and Business. Students may also take up to 3 credits in the Department of Sport and Leisure Studies and/or up to 6 credits in courses offered by any other department in the college.

**** Recommended: Anatomy and Physiology I and II.

Still Point: The high point of the Dance Program is the annual spring dance performance, Still Point. This production combines many areas of dance: modern, jazz, ballet, African.

Dance Club: The Dance Club exists for the purpose of providing physical and creative expression and an awareness of the joy of movement. It encourages participation by faculty and alumni as well as students. Dance Club members also participate in Still Point. The Still Point Dancers, the dance company of the college, are part of the Dance Club. They are a touring company and perform in schools and colleges and participate in various community and college activities.

Careers In Dance:

Teaching: private, early childhood, elementary, secondary, college.

Choreography: theatre, general production work

Dance Therapy: day care centers, family treatment centers, correctional facilities, drug addiction centers, halfway houses, outpatient clinics, special schools and camps for exceptional children, nursing homes, institutions for the mentally retarded, psychiatric facilities.

Recording Dance: film and tape, general notation.

Production: stage manager, lighting, costuming, audio, makeup, scenic design, publicity.

Liberal Arts: History Course Concentration

The Liberal Arts course concentration in History offers guidance in course selection to students interested in pursuing a bachelor's degree in History. Although this sequence takes into account prerequisites in the History departments in many New England colleges, it is only a suggested course sequence. Students interested in a history major should consult with an advisor concerning appropriate history electives.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
	Math Elective	3		Math Elective	3
	Behavioral Science Elective	3		Behavioral Science Elective	3
	Foreign Language Elective	3		Foreign Language Elective	3
HI9913	U.S. History I OR		HI9914	U.S. History II OR	
HI9901	Western Civilization I	3	HI9902	Western Civilization II	3
		15			15
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
	Literature Elective	3		Literature Elective	3
	Science Elective	4		Science Elective	4
EC3322	Micro Economics	3	EC3323	Macro Economics	3
	Geography Elective	3		History Electives	6
	History Elective	3			16
		16			

History Electives: Select from various history/government electives such as HI9962 Women's History, HI9916 Recent U.S. History, HI9917 The Family in History, HI9958 History of the Soviet Union, HI9956 American Foreign Policy, GV3313 The Federal Government or GV3314 State and Local Government and GV3320 Women and the Law.

Liberal Arts: Journalism/Broadcasting Course Concentration

The Liberal Arts course concentration in Journalism/Broadcasting provides career training for students who would like to specialize in communications for newspapers or magazines, radio and television, public relations or freelance writing.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
EN0101	Journalism I	3	EN0102	Journalism II	3
EN3333	Broadcast/Reporting & Announcing	3		Fine Arts Elective*	3
	History/Government Elective	3	PS1101	Introduction to Psychology	3
	Fine Arts Elective*	3		History/Government Elective	3
		15			15
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
EN3334	Television Production I	3		Literature Elective**	3
	Literature Elective**	3	EN3335	Television Production II	3
SO3321	Introduction to Sociology OR			Math Elective***	3
SO3324	Cultural Anthropology	3		Natural Science Elective	4
	Natural Science Elective	4		Elective****	3
	Math Elective***	3			16
		16			

* Introductory and Intermediate Photography or Introductory and Intermediate Graphic Design are recommended for Fine Arts Electives.

** Arts of the Movies is recommended as the third semester literature elective; 20th Century Women in Film is recommended as the fourth semester literature elective.

*** Any math course except the following: MA0020 Basic Mathematics, MA0030 Basic Algebra, MA5512 Mathematics for Elementary Education, MA5513 Mathematics of Finance.

**** Students may elect to take EN0103 Journalism Practicum available for second-year Journalism concentration students.

Reminder: A total of 6 credits in literature and 8 credits in science are required.

Liberal Arts: Music Course Concentration

The Liberal Arts course concentration in Music offers guidance in course selection to students interested in preparing for careers in music, either those seeking professional work or those seeking transfer to four-year colleges. Concentration students are prepared to transfer to college curriculums and/or pursue professional work in the jazz, pop and classical areas of music. Students enrolled in the music concentration should plan on taking at least 12 credits but no more than 24 credits in music courses. They should select at least one course from Category I, two courses from Category II and one course from Category III.

Category I – Listening & Music Appreciation: MU7091 Introduction to Music, MU7092 History of Jazz, MU7093 Twentieth Century Music.

Category II – Theories & Skills: MU7090 Music Reading, Notation & Ear Training; MU7100 Harmony.

Category III – Performance & Applied Skills: MU7097 Performance Ensemble I, MU7098 Performance Ensemble II, MU7101 Chorus I (2 credits), MU7102 Chorus II (2 credits).

Special Topics: Special topics in music, one to four credits; e.g., composition, research, performance, conducting and others.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
	Music Elective	3		Music Elective	3
EN4401	English Composition I	3	EN4402	English Composition II	3
FA7020	Introduction to Creative Arts	3	HU4000	Introduction to Humanities	3
	Math Requirement* OR			Math Requirement* OR	
	Free Elective	3		Free Elective	3
HI9901	Western Civilization I	3	HI9902	Western Civilization II	3
		15			15
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
	Music Elective	3		Music Elective	3
EN8861	Western Literature Before 1600	3	EN8862	Western Literature Since 1600	3
	Behavioral Science Elective	3	SO3324	Cultural Anthropology	3
	Math Requirement* OR			Math Requirement* OR	
	Free Elective	3		Free Elective	3
	Science Elective	4		Science Elective	4
		16			16

* See statements regarding Math Requirement and Free Electives in the general information section on the Liberal Arts Program.

Careers In Music: Careers are available in performance, arranging, composition, music education (private, early childhood through college), music therapy, disc jockey, music criticism, music retailing, retailing of musical instruments, music librarian, performance management and arts promotion.

Liberal Arts: Political Science Course Concentraiton

The Liberal Arts course concentration in Political Science offers guidance in course selection to students interested in pursuing a bachelor's degree in Political Science, Government, or Public Administration. Although this sequence takes into account prerequisites in these departments in many New England colleges, it is only a suggested course sequence. Students interested in further study in these areas should consult with an advisor concerning appropriate electives.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
	Math Elective	3	MA5673	Quantitative Methods	3
	Behavioral Science Elective	3		Behavioral Science Elective	3
GV3312	Introduction to Political Science	3	GV3313	Federal Government	3
	Foreign Language Elective	3		Foreign Language Elective	3
		15			15
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
	Literature Elective	3		Literature Elective	3
	Science Elective	4		Science Elective	4
EC3322	Micro Economics	3	EC3323	Macro Economics	3
	Geography Elective	3		Government/History Electives	6
	Government/History Elective	3			16
		16			

Government/History Electives: U.S. History I and II strongly recommended and other government courses such as Introduction to Law, Constitutional Law, Civil Rights, Minority Groups in America, and Recent U.S. History.

Seminar classes provide an opportunity for close teacher/student interaction.



Liberal Arts: Science Course Concentrations

The four Liberal Arts course concentrations in Science are designed as a suggested curricula for students who decide early they would like to earn a bachelor's degree in science. Although these sequences have taken into account prerequisites in science departments at New England universities, they are only suggested course sequences. Students are advised to consult with the Admissions Office/Science Department at the school to which they plan to transfer for their preferred sequence of course electives. The math, chemistry and physics course you take will depend on your high school science background. For some students, it is better to start with a more basic course such as Introductory Chemistry before General Chemistry, College Algebra and Trigonometry before Calculus I, etc. Such introductory courses may not transfer towards a science degree at many colleges/universities. With the advice of a faculty advisor, and even with a decision in the student's second year to become a science major, other course sequences (with some concentration in the sciences) may serve the same purpose for the Liberal Arts transfer students. Students interested in science concentrations should contact the Chairperson of the Department of Natural Sciences for additional information.

Liberal Arts: Biology Science Course Concentration

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
MA5675	Calculus I for Business/Social/ Life Sciences	3	MA5676	Calculus II for Business/Social/ Life Sciences	3
BI5514	Introduction to Biology: Zoology	4	BI5511	Introduction to Biology: Botany	4
CH5501	General Chemistry I	4	CH5502	General Chemistry II	4
	Behavioral Science Elective	3		History/Government Elective	3
		17			17
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
	Physics Elective*	4		Physics Elective*	4
BI5553	Microbiology	4		Biology Elective** OR	
	Literature Elective	3		Computer Science Elective***	4
	Language Elective	3		Literature Elective	3
	Behavioral Science Elective	3		Language Elective	3
		17		History/Government Elective	3
					17

* PI5621-22 Applied Physics I & II; PI5623-24 Engineering Physics I & II.

** BI5515 Principles of Biology: Research Topics in Science.

*** CT6630 Introduction to Personal Computers.

Liberal Arts: Chemistry Science Course Concentration

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
MA5690	Calculus I	4	MA5692	Calculus II	4
CH5501	General Chemistry I	4	CH5502	General Chemistry II	4
	Science Elective	4	PI5623	Engineering Physics I	4
	Behavioral Science Elective	3		History/Government Elective	3
		18			18
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
MA5693	Calculus III	4	MA5685	Differential Equations	4
PI5624	Engineering Physics II	4		Science Elective	4
	Literature Elective	3		Literature Elective	3
	Behavioral Science Elective	3		History/Government Elective	3
	Language Elective	3		Language Elective	3
		17			17

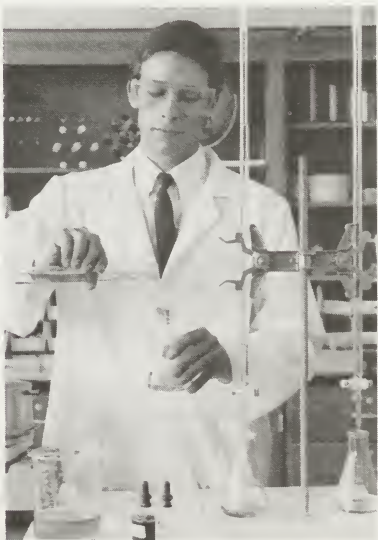
Liberal Arts: Earth Science Course Concentration

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
MA5690	Calculus I	4	MA5692	Calculus II	4
CH5501	General Chemistry I	4	CH5502	General Chemistry II	4
	Science Elective	4	PI5623	Engineering Physics I	4
	Behavioral Science Elective	3		History/Government Elective	3
		18			18
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
ES5502	Physical Geology	4	ES5501	Meteorology	4
MA5693	Calculus III	4		Literature Elective	3
PI5624	Engineering Physics II	4		Behavioral Science Elective	3
	Literature Elective	3		History/Government Elective	3
	Language/Philosophy/Religion/ Creative Arts Elective	3		Language/Philosophy/Religion/ Creative Arts Elective	3
		18			16

Liberal Arts: Physics Science Course Concentration

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
MA5690	Calculus I	4	MA5692	Calculus II	4
CH5501	General Chemistry I	4	CH5502	General Chemistry II	4
	Science Elective	4	PI5623	Engineering Physics I	4
	Behavioral Science Elective	3		History/Government Elective	3
		18			18
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
MA5693	Calculus III	4	MA5685	Differential Equations	4
PI5624	Engineering Physics II	4	PI5624	Engineering Physics III	4
	Literature Elective	3		Literature Elective	3
	Behavioral Science Elective	3		History/Government Elective	3
	Language Elective	3		Language Elective	3
		17			17

Liberal Arts course concentrations
 prepare students for transfer into
 baccalaureate programs in many
 majors.



Liberal Arts: Social Services Course Concentration

The Liberal Arts course concentration in Social Services is an introduction to the purpose, techniques and problems of social work. A guide for Liberal Arts students who wish to begin preparation for a position in public and private social work agencies and/or intend to transfer into four-year programs in social work. Suggested schedule of 61 credit hours of work required for graduation.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
PS1101	Introduction to Psychology	3	SO3335	Introduction to Social Services	3
MA5520	Liberal Arts Math I*	3	MA5525	Liberal Arts Math II*	3
SO3321	Introduction to Sociology	3		Natural Science Elective	4
	Philosophy, Fine Arts OR			Philosophy, Fine Arts OR	
	Foreign Language**	3		Foreign Language**	3
		15			16

* Another math course can be substituted for Liberal Arts Math, but please note in the general information section on the Liberal Arts program which math courses do not meet the core requirement.

** Spanish is strongly recommended.

THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
GV3310	American Government and Politics*	3		Literature Elective***	3
GV3300	Introduction to Law	3		Behavioral Science Electives****	9
	Natural Science Elective**	4		Natural Science Elective**	4
PS1354	Human Relations	3			16
	Literature Elective***	3			
		16			

* May substitute State and Local Government or Federal Government for this course.

** Biology is strongly recommended.

*** Any course offered by the English Department which includes the word "literature" anywhere in the course title. Two semesters of a literature sequence is highly recommended.

**** Any courses offered in psychology, sociology, social work or anthropology which must have a PS or SO prefix before the name of the course. An example of this is PS1203 Developmental Psychology or SO3353 Introduction to Criminology.

For further information, contact the Chairperson of the Department of Behavioral Sciences.

Liberal Arts: Theatre Course Concentration

The Liberal Arts course concentration in Theatre offers several introductory courses for academic credit over a two-year period. Students need not be planning a career in theatre to benefit. Theatre study and experience is appropriate for those seriously interested professionally as well as students seeking elective credits. The communications skills theatre courses can be used effectively in all careers. Because of the size of the classes and the various curricular and extracurricular theatre activities, the student has an excellent opportunity for experience. This can contribute to greater and more rapid personal growth.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
HI9901	Western Civilization I	3	HI9902	Western Civilization II	3
FA7029	Introduction to Creative Arts	3	HU4000	Introduction to Humanities	3
	Theatre Elective	3		Theatre Elective	
	Math Requirement* OR			Math Requirement* OR	
	Free Elective	3		Free Elective	3
		15			15
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
	Science Elective	4		Science Elective	4
EN8862	Western Literature Before 1600	3	EN8863	Western Literature Since 1600	3
	Behavioral Science Elective	3	SO3324	Cultural Anthropology	3
	Theatre Elective	3		Theatre Elective	3
	Math Requirement* OR			Math Requirement* OR	
	Free Elective	3		Free Elective	3
		16			16

* See statements regarding Math Requirement and Free Electives in the general information section on the Liberal Arts Program.

Theatre courses are offered on an alternating basis over a period of time. Theatre courses are: TH7765 Introduction to Theatre, TH7769 Acting, TH7775 Fundamentals of Play Production: Directing, TH7785 Mime, TH7789 Playwriting, TH7795 History of Theatre, TH7799 Rehearsal & Performance.

Careers In Theatre: The following careers are available in the performance area of theatre: playwright, director, actor, running crew (lights, sound, properties, costumes, scene changes), company manager, stage manager, road manager, musical aspects, dance aspects, dialect consultant.

The following careers are available in the business area of theatre: teacher, producer, theatre manager, treasurer, theatre law, box office, house management, fund raising, public relations, advertising, press representation, theatre publications, organization.

The following careers are available in the technical phase of theatre: technical director, scenic design, lighting design, costume design, production carpentry, production electrician, production properties, wardrobe supervisor, make-up artist, wig styling, sound design, technicians for light and sound, set construction, costume construction, television and motion picture specialist.

Liberal Arts: Women's Studies Course Concentration

The Liberal Arts course concentration in Women's Studies includes the following six courses: HI9962 Women's History: Giving the Majority Its Past*, EN8883 Women in Literature & Life, HI9917 The Family in History*, SO3359 Women and Society, EN8884 Literature: 20th Century Women in Film, EN8882 Literature: Women's Lives: Recorded and Imagined and GV3320 Women and the Law.

* These two courses may be offered in alternate years.

Students interested in Women's Studies may fulfill the requirements for the concentration in Women's Studies and, at the same time, fulfill basic (core) requirements for the associate degree in Liberal Arts by selecting a Women's Studies course corresponding to a specific core requirement:

LA Requirement in History/Government (6 credits) may be fulfilled by the following Women's Studies courses: Women's History, The Family in History, Women and the Law.

LA Requirement in Literature (6 credits) may be fulfilled by the following Women's Studies courses: Women in Literature & Life, 20th Century Women in Film, Women's Lives: Recorded and Imagined.

LA Requirement in Behavior Science (6 credits) may be fulfilled in part by the following Women's Studies course: Women and Society.

Any of the above courses may also be used among the 16 elective credits required in the Liberal Arts associate degree program.

Machining and Tooling Technology

The certificate program in Machining and Tooling Technology (currently offered in the Division of Continuing Education and Community Services only) is composed of two options: the Intermediate Certificate Option and the Advanced Certificate Option. The ideal candidate for this program has one or more years of experience in the field of machining or has successfully completed a machining program in a vocational high school or equivalent. Some entry-level candidates may be considered if they demonstrate mechanical ability or experience in a related field such as auto mechanics. 13/14 credits use required for the Intermediate Certificate Option; 12 credits for the Advanced Certificate Option.

INTERMEDIATE CERTIFICATE OPTION

REQUIRED COURSES		CREDITS
TE1000	Blueprint Reading I	3
MA5610	Shop Geometry & Trigonometry	2
TE1010	Machining & Tooling I	3
TE1011	Machining & Tooling II	3
	Elective*	2/3
		13/14

* Choose one of the following: TE1003 Blueprint Reading II, TE1020 Numerical Control, CT6670 Introduction to CAD/CAM, TE1025 Measurements & Production Quality, ET6601 Engineering Design Graphics

ADVANCED CERTIFICATE OPTION

Program Prerequisite: Completion of the Intermediate Certificate Option in Machining & Tooling Technology.

REQUIRED COURSES		CREDITS
TE1003	Blueprint Reading II	3
TE1020	Numerical Control	3
TE1019	Computer Numerical Control	3
TE1025	Measurements & Production Quality	3
		12

Note: If the elective transferred from the Intermediate Certificate Option is a required course in the Advanced Certificate Option, another elective must be chosen in order to complete requirements for the Advanced Certificate. This elective could be CT6670 Introduction to CAD/CAM, ET6601 Engineering Design Graphics, TE1015 Geometric Tolerancing, TE1012 Machine Tooling Processes, TE1025 Measurements & Production Quality.

Materials Management

The certificate program in Materials Management (currently offered in the Division of Continuing Education & Community Services only) is comprised of five courses in the specialized area of Materials Management. It is designed as a career program to provide professional proficiency for those who are currently working in the fields of Production Control and Inventory Management. Credits earned in the certificate program may be applied toward associate degree requirements in Business Management with a concentration in Materials Management. 15 credit hours of work are required for the certificate. **Program Prerequisite:** Principles of Materials Management, or its equivalent in field experience, is a prerequisite for all the courses in this program.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
MG7703	Capacity Management	3	MG7705	Master Planning	3
MG7706	Material Requirements Planning	3	MG7702	Production Activity Control	3
MG7704	Inventory Management	3			6
		9			

Medical Record Technology

The associate in science degree program in Medical Record Technology provides students an opportunity to take liberal arts courses and to apply knowledge obtained in technical courses through direct application in a clinical setting located off campus. Students who wish to continue their education in a four-year institution should choose electives which will fulfill the transfer requirements of the institution they choose. Job opportunities in hospitals, extended care facilities, mental health facilities, nursing homes, ambulatory care settings, community health centers, state and local health departments, regional medical programs and rehabilitation centers are available. The program is accredited by the American Medical Association's Committee on Allied Health Education and Accreditation, in collaboration with the American Medical Record Association. Students who complete requirements for graduation are eligible to take the national accreditation examination of the American Medical Record Association. 67 credit hours of work are required for graduation.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
BI5519	Anatomy & Physiology I	4	BI5520	Anatomy & Physiology II	4
MR6605	Medical Terminology I	3	MR6606	Medical Terminology II	3
MR6601	Medical Record Science I	3	MR6602	Medical Record Science II	3
HS6651	Introduction to Health Services	3	MR6667	Directed Practice I	4
		16			17
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
MR6651	Medical Record Science III	3	MR6653	Medical Record Science IV	3
CT6630	Introduction to Personal Computers	3	MG6666	Principles of Management	3
MR6629	Medical Record Coding & Classification	3		Elective	3
BI5530	Fundamentals of Disease Process	3	MR6668	Directed Practice II	4
	Liberal Arts Elective	3		Elective	3
PS1101	Introduction to Psychology OR				16
SO3321	Introduction to Sociology	3			
		18			

Note: Typewriting MUST be taken before the third semester unless students are able to type 45 wpm with 5 errors or less. Students who must take a typing course are exempt from one of the free electives listed in the fourth semester.

Medical Terminology & Transcribing

The one-year certificate program in Medical Terminology & Transcribing is designed for persons interested in working in a hospital medical record department, physician's office, clinic, laboratory, neighborhood health center, medical insurance office or other allied health institution. The program is of special interest to persons with some previous office training who wish to enhance job opportunities. It is an excellent choice for someone wishing to specialize in order to work in a medical or paramedical setting. Homemakers interested in returning to the job market would find the flexible hours available in these jobs attractive. All courses in the program may be transferred to the Medical Record Technology associate degree program. 24/25 credit hours of work are required for the certificate.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
	Typewriting II or III*	3		Typewriting III or IV*	3
MR6605	Medical Terminology I**	3	MR6661	Medical Transcription I***	3
MR6606	Medical Terminology II**	3	MR6662	Medical Transcription II***	3
	Liberal Arts Elective	3/4	SL6673	Word Processing I	3
		12/13			12

* Typing rate of 30 WPM is required for admission; choose initial typing course according to level of ability.

** Medical Terminology I, first eight weeks; Medical Terminology II, second eight weeks.

*** Medical Transcription I, first eight weeks; Medical Transcription II, second eight weeks.

Mental Health Technology

The associate in science degree program in Mental Health Technology instructs students in the theory and skills needed to recognize mental health problems in individuals, in groups and in the community; to understand the structure of mental health facilities, to understand current modalities of treatment in mental health, and to assist with physical rehabilitative therapies. Carefully supervised clinical experiences are part of the program and prepare students for middle-level professional positions in various types of mental health facilities. 63/64 credit hours of work are required for graduation. **Program Prerequisite:** Complete college admission requirements, two letters of reference, personal interview, health examination, liability insurance (taken out at time of registration at the college as part of tuition costs) and demonstration of a serious commitment to working with the mentally ill/emotionally disturbed/mentally retarded person.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
PS1101	Introduction to Psychology	3		Elective	3
MH2111	Introduction to Mental Health	3		Natural Science Elective	3/4
BI5510	Human Biology	3	MH2155	Modalities of Treatment	3
	Elective	3	MH2134	Mental Health Practicum I	4
MH2133	Observation & Recording of Mental Health Programs	<div>1</div> <div>16</div>			16/17
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
PS1751	Abnormal Psychology	3	MH2166	Seminar in Mental Health	3
MH2143	Mental Health Practicum II	4	MH2144	Mental Health Practicum III	4
MH2147	Group Dynamics	3	FA7012	Introduction to the Creative Experience	3
GV3310	American Government & Politics	<div>3</div> <div>13</div>		Sociology Elective	3
			MH2156	Behavior Mgt. Principles & Techniques	3
					16

Note: Suggested electives for the Commonwealth Transfer Compact are three mathematics credits and six credits in humanities/fine arts. All courses with an "MH" prefix are restricted to students enrolled in the Mental Health Technology, Community Residence Manager or Alcohol/Drug Abuse Counseling programs. Other students may take MH prefix courses, depending upon class size, with written permission of the coordinator.

Mental Health Technology: Alcohol/Drug Abuse Counseling

The one-year certificate program in Alcohol/Drug Abuse Counseling is designed to provide the opportunity for students to learn the theory and develop the skills needed to assist clients toward recovery from their alcohol/drug abuse problem. Special consideration will be given to current modalities of treatment and ethical issues involved in direct care services. Carefully supervised clinical experiences in alcohol/drug abuse services are an integral part of the program and prepare students for positions as counselors in alcohol and drug abuse. 24 credit hours of work are required for the certificate. **Program Prerequisite:** Complete college admission requirements; two letters of reference; personal interview; health examination; liability insurance (taken out at time of registration at the college as part of tuition costs); demonstration of a serious commitment to working with the mentally ill/emotionally disturbed/mentally retarded person.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
MH2111	Introduction to Mental Health	3	MH2171	Counseling Techniques with Drug Abusers	3
MH2133	Observation and Recording of Mental Health Programs	1	MH2169	Mental Health Practicum II in Alcohol/Drug Abuse Services	4
MH2170	Alcohol and Drug Abuse	3	MH2155	Modalities of Treatment	3
MH2168	Mental Health Practicum I in Alcohol/Drug Abuse Services	4			10
MH2147	Group Dynamics	3			
		14			

Note: All courses with an "MH" prefix are restricted to students enrolled in the Mental Health Technology, Community Residence Manager or Alcohol/Drug Abuse Counseling programs.

Mental Health Technology: Community Residence Manager

The one-year certificate program in Mental Health Technology: Community Residence Manager provides students with the theory and skills needed to provide direct client services such as assisting residents to master activity of daily living skills; group and individual counseling; money management techniques for residents; community referral skills; and an understanding of the problems of the mentally retarded and mentally ill as they seek to enter into the mainstream of our society after years of institutionalization. Carefully supervised clinical experiences in residential services are an integral part of the program and prepare students for positions as community residence managers. Graduates of this program have the opportunity to continue working toward an associate's degree in Mental Health Technology. 33 credit hours of work are required for the certificate. **Program Prerequisites:** Complete college admission requirements, two letters of reference, personal interview, health examination, liability insurance (taken out at time of registration at the college as part of tuition costs), and demonstration of a serious commitment to working with the mentally ill/emotionally disturbed/mentally retarded person.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
MH2111	Introduction to Mental Health	3	PS1101	Introduction to Psychology	3
GV3310	American Government & Politics	3	MH2156	Behavior Management Principles and Techniques	3
MH2133	Observation & Recording of Mental Health Programs	1	MA5613	Mathematics of Finance	3
MH2147	Group Dynamics	3	MH2146	Mental Health Practicum in Residential Services II	4
MH2145	Mental Health Practicum in Residential Services I	4			16
		17			

Note: All courses with an "MH" prefix are restricted to students enrolled in the Mental Health Technology, Community Residence Manager or Alcohol/Drug Abuse Counseling programs. Other students may take MH prefix courses, depending upon class size, with written permission of the coordinator.

Office Management

The associate in science degree program in Office Management is designed to prepare students for responsible careers in the office and business fields. The work of the office manager provides midmanagement careers in fields such as general and personnel administration, finance, law, insurance, banking, government and other areas of the professional and business world. This program is primarily intended for individuals with substantial experience in some occupation in the field who wish to prepare themselves for promotional opportunities at the supervisory level and for those individuals already possessing high-level business skills in shorthand and typewriting upon matriculation. 60/63 credit hours of work are required for graduation.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
AC6691	Elements of Accounting I OR		AC6692	Elements of Accounting II OR	
AC6601	Introductory Accounting I	3/4	AC6602	Introductory Accounting II*	3/4
TW6621	Typewriting I OR		PS1101	Introduction to Psychology	3
	Business Elective	3	TW6622	Typewriting II OR	
SL6682	Managerial Communications	3		Business Elective	3
	Social Science Elective	3	SH6611	ABC Shorthand	3
		15/16			15/16
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
SL6661	Office Administration	3	SL6665	Essentials of Office Management	3
TW6631	Typewriting III	3	LW6651	Business Law I	3
SL6673	Word Processing I	3		Natural Science Elective	3/4
MG6690	Management Information Systems	3		Business Elective	3
	Liberal Arts Elective	3		Liberal Arts Elective	3
		15			15/16

*Prerequisite: A grade of C or better in AC6601 Introductory Accounting I.

Office Skills

The one-year certificate program in Office Skills is designed as a short, intensive career program to give students the opportunity to acquire office skills necessary when seeking profitable employment. The program includes a basic core of required courses supplemented by a variety of electives designed to satisfy individual needs. All courses in the program may be transferred toward associate degree programs in Executive Secretarial or Office Management. 24/26 credit hours of work are required for the certificate.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3		Typewriting II, III or IV*	3
	Typewriting I, II or III*	3		Office Skills Electives**	6/7
AC6691	Elements of Accounting I	3		Liberal Arts Elective	3/4
SL6661	Office Administration	3			12/14
		12			

* Choose appropriate course after consultation with advisor.

** Choose two of the following office skills electives: CO4401 Cooperative Education I (40 hours work experience), SL6665 Essentials of Office Management, SL6673 Word Processing I, SK6653 Machine Transcription, MG6666 Principles of Management, AC6692 Elements of Accounting II, SH6621 Principles of Shorthand, SH6622 Intermediate Shorthand, SH6611 ABC Shorthand (all 3 credit courses) or CT6633 Introduction to Data Processing with BASIC (4 credits).

Paralegal Certificate

The certificate program in Paralegal is intended for students with previous college-level experience. It is principally designed for those seeking careers as legal assistants. A transfer option is available. Certificate recipients must complete 60 credit hours of work for the certificate with the following distribution: 30 credits in general education; 18 credits in law-specialty (LW prefix) courses*; 12 credits in elective courses. 24 credit hours of work must be completed at Northern Essex Community College. **Program Prerequisite:** Satisfactory completion of 36 college credits in general education and/or law related courses, and a personal interview.

REQUIRED COURSES		CREDITS	ELECTIVES**		CREDITS
GV3300	Introduction to Law	3	LW6663	Corporate Law	3
LW6670	Legal Research and Drafting	4	LW6662	Wills, Estates and Trusts	3
LW6661	Litigation	3	LW6653	Real Estate Law	3
GV3301	Constitutional Law	3	LW6664	Domestic Law	3
		13	LW6665	Taxation	3
					12

* Credit for law-specialty courses (LW prefix) taken more than six years prior to completion of the Certificate Program will not be awarded, less the student's proficiency in the area can be demonstrated.

** Select four courses

Note: Students must obtain a minimum grade of "C" in all law specialty courses (LW prefix) in order to meet the graduation requirements for the Paralegal Certificate. LW courses are offered only during specific semesters. In addition, LW6665 Taxation is currently offered through the Division of Continuing Education & Community Services only. The Taxation course is important for students interested in the fields of Corporations and Wills, Estates and Trusts.

Paralegal Studies

The associate in arts degree program in Paralegal Studies is designed to prepare students to seek careers as legal assistants in law offices and related social and public service agencies, and to offer Liberal Arts students exploratory courses in the field of law and related disciplines. The program is designed primarily as a Liberal Arts program with a career concentration in the paralegal area. 64/66 credit hours of work are required for graduation.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
	Humanities Elective	3		Natural Science Elective	4
SO3333	Contemporary Social Problems	3	GV3301	Constitutional Law	3
GV3300	Introduction to Law	3		Math Elective*	3/4
LW6670	Legal Research and Drafting	4	LW6661	Litigation	3
LW6640	Introductory Seminar for Paralegals	1			16/17
		17			
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
GV3315	Civil Rights and Liberties	3		Humanities Elective	3
LW6662	Wills, Estates and Trusts	3	LW6653	Real Estate Law	3
LW6663	Corporate Law	3	LW6664	Domestic Law	3
	Humanities Elective	3		Elective**	3
	Math Elective*	3/4		Elective**	3
		15/16	LW6642	Advanced Seminar for Paralegals	1
					16

* LW6665 Taxation, a course offered through the Division of Continuing Education & Community Services, is highly recommended as an elective for students interested in the fields of Corporations and Wills, Estates and Trusts. In addition, students should seriously consider a cooperative education course as an elective.

** The math requirement may be filled by any math course except the following: MA0020 Basic Mathematics; MA0030 Basic Algebra; MA5512 Math for Elementary Education; MA5513 Math of Finance. It is recommended that students with strong math competencies take Statistics and Quantitative Methods.

Note: Students must obtain a minimum grade of "C" in all law-specialty courses (LW prefix) in order to meet the graduation requirements for the Paralegal Program. Credit for law-specialty courses (LW prefix) taken more than six years prior to completion of the Paralegal Studies Program will not be awarded, unless the student's proficiency in the area can be demonstrated.

Practical Nursing

The ten-month certificate program in Practical Nursing is designed to provide the student with the theory and skills needed to function as a competent entry-level graduate practical nurse. The curriculum conforms to the guidelines established by the Massachusetts Board of Registration in Nursing. The Application for Registration as a Practical Nurse With Examination includes the following question – "Court Record: 'Have you ever been convicted by Court of Law? Yes ___ No ___'. If "yes," please enclose explanation stating date, charge, disposition'." The program is 40 weeks in length, exclusive of vacations, and divided into three semesters. Third semester courses are offered during the summer months. 41 credit hours of work are required for the certificate.

Program Prerequisites: High school diploma or equivalent, pre-entrance examination for practical nursing (scores of 50 percentile or above are preferred in all areas), personal interview.

FALL SEMESTER		CREDITS	SPRING SEMESTER		CREDITS
PN0101	Practical Nursing I	10	PN0201	Practical Nursing II	10
SC5503	Integrated Science I	3	SC5504	Integrated Science II	3
PS6551	Adulthood & Aging	3	PS1205	Human Growth & Development	3
		16			16
SUMMER SESSION		CREDITS			
PN0301	Practical Nursing III	8			
PN0310	Vocational Trends in Practical Nursing	1			
		9			

The Curriculum

Sequence of Courses: The Practical Nursing curriculum has been structured in a special sequence. Students are required to follow this sequence of courses throughout the entire three semesters of the Practical Nursing program. Students are also required to complete successfully all courses in each semester before proceeding to the next semester. Any deviation from the planned schedule can be made only with written permission from the Nursing Program Coordinator. It is the responsibility of the student to be knowledgeable regarding when courses are offered and plan accordingly.

Grading: The final grade in Practical Nursing courses is based on theory and on performance in the clinical setting. A failure in either area constitutes failure for the course. Students must maintain a "C" in Practical Nursing courses to proceed to the next semester. Graduation from the Practical Nursing Program is contingent on maintaining at least a grade of "C" in all Practical Nursing courses and a Quality Point Average (QPA) of 2.0.

NLN Exams: Standardized National League for Nursing examinations are required as an integral aspect of the curriculum for graduation.

Travel: Students are responsible for their own transportation to and from clinical agencies. Selected clinical experiences may be offered during the evening hours. Students must be prepared for these alternately scheduled hours. Students may request experience in a specific clinical agency; however, final decision regarding the placement of students rests with the Practical Nursing faculty. **Note:** On occasion, conferences may be scheduled at the school during clinical hours, requiring students to return to the school from the clinical agency.

Malpractice Insurance: All Practical Nursing students are required to carry malpractice insurance. The premium is to be paid at registration in the Fall of each year.

Health: Nursing students are required to complete a health evaluation prior to beginning the Practical Nursing program. Students desiring a career in Practical Nursing must be physically and emotionally capable of assuming responsibility for client care in the health care institution they are assigned to for clinical practice.

C.P.R. Certification: All Practical Nursing students are required to be certified in Basic Life Support (C.P.R.) prior to their first clinical assignment in the Spring semester. This may be accomplished by participating in C.P.R. instruction offered by the American Heart Association, The American Red Cross or local hospitals.

Printed Circuit Technology

The certificate program in Printed Circuit Technology (currently offered in the Division of Continuing Education and Community Services only) is comprised of seven courses in the specialized area of printed circuit fabrication. Whether you are currently employed in this field or seeking an entry-level position in printed circuit technology, this program will provide you with in-depth knowledge of all processes and operations involved in the fabrication of printed circuit boards. 24/25 credit hours are required for the certificate.

REQUIRED COURSES		CREDITS
PC1101	Printed Circuit Technology Survey	3
MA5650	Technical Mathematics	4
PC1021	Basic Chemistry for Industry	4
PC1030	Image Transfer Processes for PC Manufacturing	4
PC1031	Mechanical Processes for PC Manufacturing	3
PC1010	Introduction to Quality Assurance	3
	Elective*	<u>3/4</u>
		24/25

* Choose from following: PC1040 Plating Methods & Materials, MG6651 Industrial Management, MG7701 Principles of Materials Management, EN4676 Technical Writing, and special topics not listed in catalog.

Purchasing Technology and Management

The certificate program in Purchasing Technology and Management (currently offered in the Division of Continuing Education & Community Services, or available to local companies on or off site through the Day Division) is designed as a short, intensive career program for entry level placement or employment upgrade in the field of purchasing. The curriculum has been developed to provide the student with the skills and knowledge required in a modern procurement department. 18 credit hours are required for the certificate.

FALL SEMESTER		CREDITS	SPRING SEMESTER		CREDITS
MG6654	Purchasing I	3	MG6655	Purchasing II	3
LW6651	Business Law I	<u>3</u>	CT6630	Introduction to Personal Computers	<u>3</u>
		6			6

SUMMER SESSION		CREDITS
MG6656	Commodity Purchasing	3
MG6690	Introduction to Information Management	<u>3</u>
		6

Radiologic Technology

The associate in science degree program in Radiologic Technology interconnects closely all of the technical studies in the program with clinical experiences – you put your classroom-learned techniques to work at once under supervision. You'll be ready to take the national board examination sponsored by the American Registry of Radiological Technologists when you graduate. The successful completion of this exam qualifies you to be employed as a registered radiologic technologist. In order to progress in the program a grade of "C" or better is required in each Radiologic Technology course. 70 credit hours of work are required for graduation.

Program Prerequisite: Two science courses (one must be in biology, anatomy & physiology, chemistry or physics); and two math courses (one must be algebra).

SUMMER SESSION*		CREDITS
RT6504	Introduction to Radiologic Technology	3
		3

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
BI5519	Anatomy & Physiology I	4	BI5520	Anatomy & Physiology II	4
PI6511	Radiologic Science I	3	PI6512	Radiologic Science II	3
RT6519	Radiologic Technology I	4	RT6529	Radiologic Technology II	4
RT6515	Clinical Practicum I	2	RT6525	Clinical Practicum II	2
		16		Mathematics Elective	3
					19

SUMMER SESSION**		CREDITS
RT6523	Radiologic Internship	2
		2

THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
RT6531	Radiologic Technology III	3	RT6541	Computers in Radiography	3
RT6533	Advanced Radiographic Positioning	3	BI5530	Fundamentals of the Disease Process	3
RT6539	Special Radiographic Procedures	3	RT6549	Radiobiology	3
RT6535	Clinical Practicum III	3	RT6545	Clinical Practicum IV	3
	Liberal Arts Elective	3		Behavioral Science Elective	3
		15			15

* Four weeks from August 1-30 of the summer prior to the first semester of work in this program, each student must complete RT6504 Introduction to Radiologic Technology as a three-credit orientation course. This will also include a clinical internship at your affiliate hospital.

** Ten week clinical internship at affiliate hospital.

Clinical Experience: This program requires successful completion of a clinical experience at one of the college's affiliate hospitals. This clinical experience is spread out over a 22-month period concurrent with the four-semester curriculum.

Malpractice Insurance: All Radiologic Technology students are required to carry malpractice insurance. The premium is to be paid prior to the beginning of classes. Students may not participate in the Radiologic Technology program without malpractice insurance coverage.

Health: Radiologic Technology students are required to complete a health evaluation prior to beginning the Radiologic Technology program. The college's Student Health Service will designate when this information is due at the college.

Registered Nursing – Day/Evening/12-Month Options

The associate in science degree program in Registered Nursing is a comprehensive, demanding and rewarding program which requires a strong commitment from students to complete the course of study. 67 credit hours of work (34 nursing credits and 33 general education credits) are required for graduation. Students may complete the program in a 12-month, 2-year, or 2 1/2-year time frame. It is possible for students to fulfill the general education requirements in either the Day Division or the Division of Continuing Education & Community Services. The Registered Nursing program requires that all students be C.P.R. Certified (Basic Life Support) prior to clinical experience in a health care institution. Students must make every effort to become certified prior to admission to the Registered Nursing program, but certification must be obtained prior to the start of clinical practice. This may be accomplished by participating in C.P.R. instruction offered by the American Heart Association, the American Red Cross or local hospitals. It is also expected that students maintain certification throughout their educational program in Registered Nursing. Graduates are prepared to write the State Board Examination for licensure as a Registered Nurse. The Application for Registration as a Professional Nurse With Examination includes the following question – "Court Record: Have you ever been convicted by Court of Law? Yes ___ No ___. If "yes," please enclose explanation stating date, charge, disposition."

Program Prerequisites: 4 years of high school English; 2 years of science (one must be a laboratory course in chemistry); 2 years of mathematics (at least one year of algebra); high school diploma or equivalency certificate.

THE CURRICULUM

Sequence of Courses: Any deviation from the planned schedule can be made only with written permission from the Nursing Program Administrator. It is the responsibility of the student to be knowledgeable regarding when courses are offered and plan accordingly.

Grading: The final grade in a Nursing course is based on theory and performance in the clinical setting. A failure in either area constitutes failure for the course. Students must maintain a "C" in Nursing courses to proceed to the next semester. Graduation from the Registered Nursing program is contingent on maintaining at least a grade of "C" in all Nursing courses and a QPA (Quality Point Average) of 2.0.

Travel: Students are responsible for their own transportation to and from clinical agencies. Clinical experience is scheduled weekly and may include day and evening clinical experiences. Students must be prepared for these alternately scheduled hours. Students may request experience in a specific clinical agency; however, final decision regarding the placement of students rests with the Nursing faculty. **Note:** On occasion, conferences may be scheduled at the college during clinical hours, requiring students to return to the college from the clinical agency.

Malpractice Insurance: All Nursing students are required to carry malpractice insurance. The premium is to be paid at registration in the Fall of each year.

Health: Nursing students are required to complete a health evaluation prior to beginning the Registered Nursing program. Students desiring a career in Registered Nursing must be physically and emotionally capable of assuming responsibility for client care in the health care institutions they are assigned to for clinical practice.

Standardized Achievement Exams: Mosby's Assess Test examinations are required as an integral aspect of the curriculum for graduation.

Advanced Placement: The Registered Nursing Program provides advanced placement opportunity through the college's Credit for Life Learning policy. Opportunity is provided for applicants with previous nursing education and experience to challenge NS6603 Nursing I for 8 credits.

REGISTERED NURSING CURRICULUM – DAY OPTION

FALL SEMESTER		CREDITS	SPRING SEMESTER		CREDITS
NS6603	Nursing I	8	NS6604	Nursing II	8
BI5519	Anatomy & Physiology I	4	BI5520	Anatomy & Physiology II	4
EN4401	English Composition I	3	EN4402	English Composition II	3
PS1101	Introduction to Psychology	3	PS1203	Developmental Psychology	3
		18			18

Prerequisites: Nursing I must be completed with a grade of "C" or better. BI5519, EN4401 and PS1101 must be taken prior to or concurrent with Nursing I.

Prerequisites: Nursing II must be completed with a grade of "C" or better. Nursing I must be taken prior to Nursing II. BI5520, EN4402 and PS1203 must be taken prior to or concurrent with Nursing II.

FALL SEMESTER		CREDITS	SPRING SEMESTER		CREDITS
NS6653	Nursing III	8	NS6654	Nursing IV	10
SO3321	Introduction to Sociology	3		Social Science Elective**	3
BI5553	Microbiology	4			13
	Humanities Elective*	3			
		18			

Prerequisites: Nursing III must be completed with a grade of "C" or better. Nursing II must be taken prior to Nursing III. SO3321, BI5553 and the Humanities Elective must be taken prior to or concurrent with Nursing III.

Prerequisites: Nursing IV must be completed with a grade of "C" or better. Nursing III must be completed prior to Nursing IV.

* Humanities elective to be chosen from courses offered by the departments of Creative Arts and/or English and/or Foreign Languages, Philosophy & Religion.

** Social science elective to be chosen from courses offered by the departments of Behavioral Sciences and/or History & Government.

REGISTERED NURSING CURRICULUM – 12-MONTH OPTION

The 12-month option of the Registered Nursing program is an intensive accelerated opportunity for applicants with previous nursing education and experience to advance his/her career. Eight credits for previous nursing education are granted to those who successfully complete the college's Credit for Life Learning exam for Nursing I. **Program Prerequisite:** The general prerequisites for the Registered Nursing program; and, in addition to achieving credit for Nursing I, the following courses must be completed with passing grades before matriculation: BI5519 Anatomy & Physiology I (4 cr.), BI5520 Anatomy & Physiology II (4 cr.), BI5553 Microbiology (4 cr.), PS1101 Introduction to Psychology (3 cr.), EN4401 English Composition I (3 cr.), NS6600 Concepts of Role Transition for Nursing Practice (1 cr.).

SUMMER SESSION		CREDITS	FALL SEMESTER		CREDITS
NS6604	Nursing II	8	NS6653	Nursing III	8
PS1203	Developmental Psychology	3	SO3321	Principles of Sociology	3
EN4402	English Composition II	3		Social Science Elective	3
		14			14
SPRING SEMESTER		CREDITS			
NS6654	Nursing IV	10			
	Humanities Elective	3			
		13			

REGISTERED NURSING CURRICULUM – EVENING OPTION

The Evening Option of the Registered Nursing program requires two and one half years. **Program Prerequisite:** The general prerequisites for the Registered Nursing program. In addition, the following 3 credit courses must be completed prior to beginning nursing courses: EN4401 English Composition I, PS1101 Introduction to Psychology and SO3321 Introduction to Sociology.

FALL SEMESTER		CREDITS	SPRING SEMESTER		CREDITS
NS6603	Nursing I	4	NS6603	Nursing I	4
BI5519	Anatomy & Physiology I	4	BI5520	Anatomy & Physiology II	4
EN4402	English Composition II	3	PS1203	Developmental Psychology	3
		11			11

Prerequisites: Nursing I must be completed with a grade of "C" or better. BI5519 must be taken prior to or concurrent with Nursing I.

SUMMER SESSION	CREDITS
NS6604 Nursing II	8
	8

Prerequisites: Nursing II must be completed with a grade of "C" or better. Nursing I must be taken prior to Nursing II. BI5520 must be taken prior to or concurrent with Nursing II.

FALL SEMESTER		CREDITS	SPRING SEMESTER		CREDITS
NS6653	Nursing III	4	NS6653	Nursing III	4
BI5553	Microbiology	4		Social Science Elective	3
		8		Humanities Elective	3
					10

Prerequisites: Nursing III must be completed with a grade of "C" or better. Nursing II must be taken prior to Nursing III. SO3321, BI5553 and the Humanities Elective must be taken in appropriate semesters.

SUMMER SESSION		CREDITS	FALL SEMESTER		CREDITS
NS6654	Nursing IV	5	NS6654	Nursing IV	5
		5			5

Prerequisites: Nursing IV must be completed with a grade of "C" or better. Nursing III must be completed prior to Nursing IV.

Respiratory Therapy Technician

The certificate program in Respiratory Therapy encompasses the first year of the associate degree program and also includes Respiratory Therapy IV during the third semester. The Respiratory Therapy Technician program prepares the student for an entry-level practitioner position by teaching the student fundamental knowledge, technical information and clinical skills necessary for employment in the respiratory care field. Technicians will assume clinical responsibility for specific respiratory care modalities involving the application of well-defined therapeutic techniques under the direct or indirect supervision of a therapist or physician. Graduates are prepared to sit for the examination given by the National Board for Respiratory Care to become Certified Respiratory Therapy Technicians. In order to progress in the program, a grade of C or better is required in each Respiratory Therapy course. 50 credit hours are required for the certificate. **Program Prerequisite:** Two science courses (one must be in biology, chemistry, or physics) and two math courses (one must be in algebra).

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
BI5519	Anatomy & Physiology I	4	EN4401	English Composition I	3
MA5500	Intermediate Algebra	3	BI5520	Anatomy & Physiology II	4
SC5515	Fundamentals of Science	3	RS6629	Respiratory Pharmacology	2
RS6614	Introduction to Respiratory Care	7	RS6624	Respiratory Procedures & Assessment	7
RS6615	Respiratory Practicum I	2	RS6625	Respiratory Practicum II	4
		19			20
THIRD SEMESTER		CREDITS			
RS6644	Ventilator Management and Pulmonary Function Testing	7			
RS6645	Respiratory Practicum III	4			
		11			

Malpractice Insurance: All Respiratory Therapy students are required to carry malpractice insurance. The premium is to be paid prior to the beginning of classes. Students may not participate in the Respiratory Therapy program without malpractice insurance.

Health: Respiratory Therapy students are required to complete a health evaluation prior to beginning the Respiratory Therapy program. The college's Student Health Service will designate when the information is due at the college.



Graduates of programs in the health professions find their skills immediately marketable.

Respiratory Therapy Technology

The associate degree program in Respiratory Therapy Technology incorporates all of the learning objectives of the entry-level certificate program and goes beyond to present the theoretical knowledge and clinical procedural skills required for employment as an advanced level practitioner. The respiratory therapist specializes in the application of scientific knowledge and theory to practical clinical problems of respiratory care. The respiratory therapist is qualified to assume primary responsibility for all respiratory care modalities and may be required to exercise considerable independent clinical judgment in the respiratory care of patients under the direct or indirect supervision of a physician. Graduates are prepared to sit for the examination given by the National Board for Respiratory Care to become a Registered Respiratory Therapist. In order to progress in the program, a grade of "C" or better is required in each Respiratory Therapy course. 75 credit hours are required for graduation. **Program Prerequisites:** Two science courses (one must be in biology, chemistry or physics) and two math courses (one must be algebra) with a grade of "C" or better.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
BI5519	Anatomy & Physiology I	4	EN4401	English Composition I	3
MA5500	Intermediate Algebra	3	BI5520	Anatomy & Physiology II	4
SC5515	Fundamentals of Science	3	RS6629	Respiratory Pharmacology	2
RS6614	Introduction to Respiratory Care	7	RS6624	Respiratory Procedures & Assessment	7
RS6615	Respiratory Practicum I	2	RS6625	Respiratory Practicum II	4
		19			20
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
EN4402	English Composition II	3		Humanities Elective OR	
BI5553	Microbiology	4		Social Science Elective	3
RS6644	Ventilator Management and Pulmonary Function Testing	7	RS6659	Respiratory Therapy Seminar	2
RS6645	Respiratory Practicum III	4	RS6654	Respiratory Intensive Care	6
		18	RS6655	Respiratory Practicum IV	4
				Elective	3
					18

Malpractice Insurance: All Respiratory Therapy students are required to carry malpractice insurance. The premium is to be paid prior to the beginning of classes. Students may not participate in the Respiratory Therapy program without malpractice insurance coverage.

Health: Respiratory Therapy students are required to complete a health evaluation prior to beginning the Respiratory Therapy program. The college's Student Health Service will designate when the information is due at the college.

Robotics Technology

The thirty-week certificate program in Robotics Technology provides concentrated courses which develop the skills essential for an individual to become a robotic servicing technician. 29 credit hours of work are required for the certificate.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
MA5687	Contemporary Math for Electronics	4	CT6682	Computer Applications in Engineering & Technology	4
ET6111	Introduction to Electric Circuits	4	ET6690	Microcomputers	4
CT6601	Fundamentals of Digital Logic	3	ET6641	Robotics I	3
ET6603	Digital Logic Lab	1	ET6642	Robotics II	3
EN4401	English Composition I	3			
		15			14

Travel and Tourism Management

The certificate program in Travel and Tourism Management provides the student with the knowledge and practical skills required to gain employment in the travel industry. 28 credit hours are required for the certificate.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
TL1001	Introduction to the Travel & Tourism Industry	3	TL1010	Reservations and Ticketing	3
GE9511	Introduction to Geography	3	TL1011	Travel & Tourism Marketing Techniques	3
AC6691	Elements of Accounting I	3	TL1012	Legal Aspects of Travel Agency Operations	3
SL6682	Managerial Communications	3		Elective**	3
TW6610	Keyboarding I OR		CI4401	Career Internship OR	
TW6611	Keyboarding II*	<u>1</u>		Business Elective	<u>3</u>
		13			15

* Choose according to placement test.

** Recommended electives: MG6686 Small Business Management, CT6630 Introduction to Personal Computers, MK6679 Advertising, MK6681 Salesmanship and a foreign language.

CONTINUING EDUCATION COURSE SEQUENCE

Continuing Education students should take courses in the following order:

- Session 1: Introduction to Travel & Tourism Industry
Introduction to Geography
- Session 2: Keyboarding I or II
Elements of Accounting I
Managerial Communication
- Session 3: Travel and Tourism Marketing Techniques
Legal Aspects of Travel Agency Operations
- Session 4: Elective ** (see above)
Internship

Tumor Registry

The thirty-week certificate program in Tumor Registry provides concentrated courses that develop skills essential for an individual preparing for employment as a tumor registrar. Students will obtain skills in data collection, records management and analysis of cancer data. 27 credit hours of work are required for the certificate.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
MR6605	Medical Terminology I	3	MR6606	Medical Terminology II	3
BI5519	Anatomy & Physiology I	4	BI5520	Anatomy & Physiology II	4
SC5516	Introduction to Cancer and Management of the Cancer Patient*	2	MR3009	Cancer Coding, Statistics & Epidemiology*	3
CT6633	Introduction to Data Processing w/BASIC	<u>4</u>	MR3020	Organization, Operation & Quality Assurance in a Tumor Registry*	2
		13	MR3030	Residency Training for Tumor Registrars**	<u>2</u>
					14

* Skills training component as part of course.

** On-site training component.

Word Processing Technology & Management

The associate in science degree program in Word Processing Technology & Management provides the opportunity for students to approach this rapidly expanding job market at the entry level, as well as the essential managerial background to advance to managerial and supervisory positions as word processing managers. There is intensive concentration in the technical area of word processing and office management. Education is provided for students interested in acquiring a productive and financially rewarding career in the word processing field within industries in the immediate area. 61 credit hours of work are required for graduation.

FIRST SEMESTER		CREDITS	SECOND SEMESTER		CREDITS
EN4401	English Composition I	3	EN4402	English Composition II	3
	Typing I, II or III*	3		Typing II, III, IV	3
SL6661	Office Administration I	3	AC6692	Elements of Accounting II	3
AC6691	Elements of Accounting I	3	SL6665	Essentials of Office Management	3
	Liberal Arts Elective	3		Behavioral Science Elective	3
		15			15
THIRD SEMESTER		CREDITS	FOURTH SEMESTER		CREDITS
	Typing III, IV OR		SL6674	Word Processing II	3
	Secretarial Science Elective	3	SK6653	Machine Transcription	3
SL6669	Managerial Communication	3		Humanities Elective	3
SL6673	Word Processing I	3	SH6611	ABC Shorthand	3
	Natural Science Elective	4		Elective**	3
	Liberal Arts Elective	3			15
		16			

- * Students will elect a sequence of typewriting courses (TW6621, TW6622, TW6631) after consultation with department advisor.
- ** Choose one of the following electives: Cooperative Education in Word Processing, Elements of Accounting III, Introduction to Data Processing with BASIC.



A degree in word processing provides the base for jobs in computer-related fields.



Course Descriptions

Course Scheduling

The Northern Essex Community College catalog makes no attempt to indicate when specific courses are scheduled. Many courses are offered every year, some every other year. Schedules are issued well before the beginning of each semester.

Special Topics Courses/Directed Studies

In addition to the courses listed, courses of special nature may be made available for students. For further information concerning such courses, see the section in this catalog on Academic Standards.

Math Charts

Math charts are included for students in the Business, Liberal Arts and Technology programs to assist them in selecting math courses appropriate to their backgrounds in math and their current and future educational goals. For further assistance, see an advisor. **Note:** For all mathematics courses involving prerequisites, it is recommended that the student earn a C or better in the prerequisite course before attempting the next course in sequence.

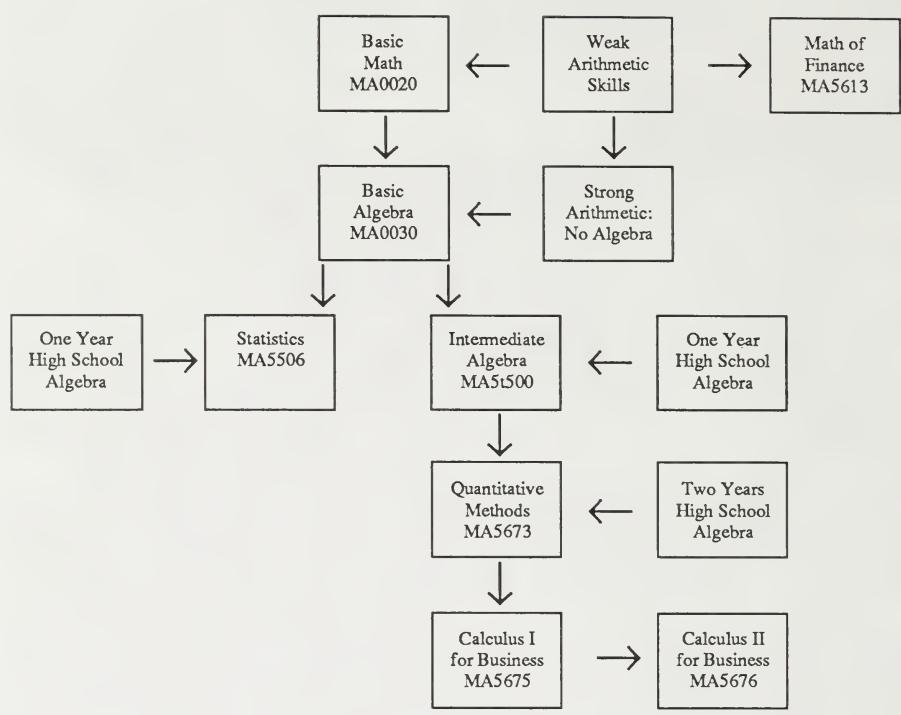
A Executive Secretarial Shorthand Chart for students in the Executive Secretarial programs is included with these programs in the section in this catalog on Associate Degree and Certificate Programs.

Symbols

All courses are identified by a six-symbol description preceding the course title. The first two digits relate to the discipline and are letter symbols; the last four digits are numbers. The following list of symbols is provided as a guide to help each student locate a specific course description.

	Page		Page
AC Accounting	105	HR Hotel & Restaurant Management	135IN
AL American Sign Language	106	Interpreter Training	136
AS Aerospace Studies	106	IT Italian	138
BI Biology	108	LW Law	138
BK Banking	107	MA Mathematics	142
BU Business Seminar	109	MG Management	140
CC Early Childhood Education	117	MH Mental Health	147
CE Civil Technology	110	MK Marketing	142
CH Chemistry	109	MR Medical Record Technology	145
CI/CO Cooperative Education	114	MU Music	149
CJ Criminal Justice	115	NS Nursing	150
CT Computer Technology	112	PC Printed Circuit Technology	157
DA Dental Assistant	116	PE Physical Education	153
EC Economics	119	PH Philosophy	152
ED Education	119	PI Physics	155
EL Electricity	119	PN Practical Nursing	156
EN English, Literature	122	PS Psychology	157
ES Earth Science	118	RE Religion	160
ET Electronics	120	RS Respiratory Therapy	161
EV Environmental Technology	128	RT Radiologic Technology	159
FA Fine Arts	129	SC Science	163
FI Finance	128	SH Shorthand	163
FR French	131	SK Office Techniques	152
GE Geography	132	SL Office Administration	151
GM German	132	SO Sociology	164
GR Gerontology	132	SP Spanish	165
GV Government	132	TE Technology	166
HI History	134	TH Theatre	167
HS Health Services	134	TL Travel and Tourism	167
		TW Typewriting	168

Business Math Sequence



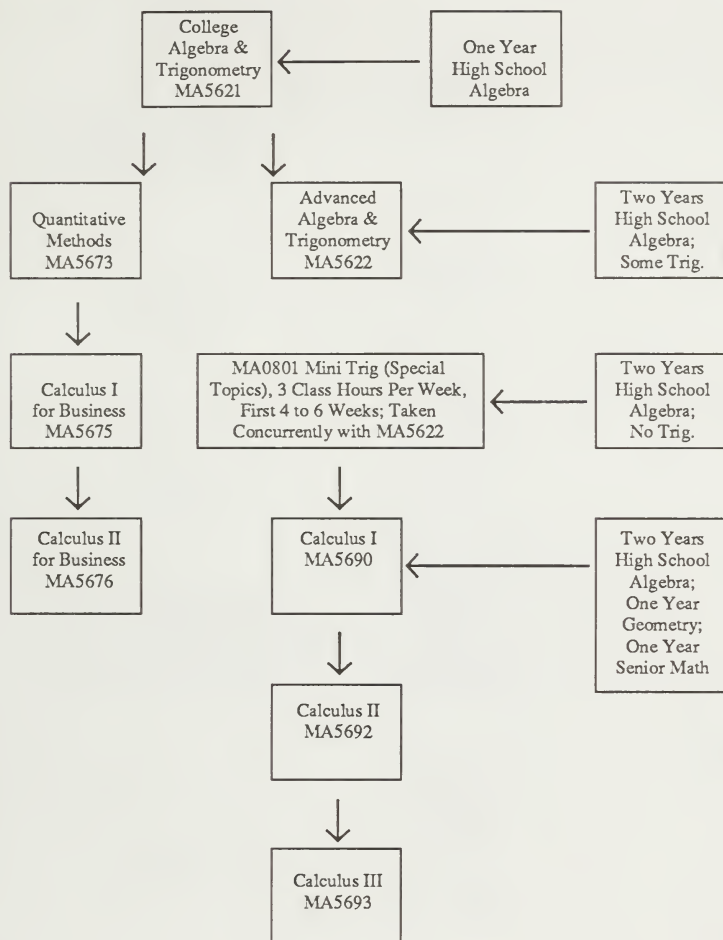
Note: If a mathematics course requires a prerequisite, it is recommended that the student earn a C or better in the prerequisite before attempting the next course in the sequence.

Note: To fill the mathematics requirements for a degree in Accounting, Business Management or Business Transfer, select any two of the courses listed in the Business Math Sequence except that only one of the following courses may be used to fulfill this requirements: MA0020 Basic Math or MA5613 Math of Finance. If you are uncertain of your math background, go to the Math Lab (Room C-211) for advice.

Transfer Notes: In order to transfer to Business Administration at the University of Massachusetts at Amherst, you must complete MA5675/MA5676 Calculus I and II for Business. The University of Lowell has agreed to accept MA5673 Quantitative Methods and MA5675/MA5676 Calculus I and II for Business in place of its Math Analysis Sequence. Your program is your responsibility; contact the college to which you may wish to transfer for current information.

Computer Technology Math Sequence

Business Programming Option

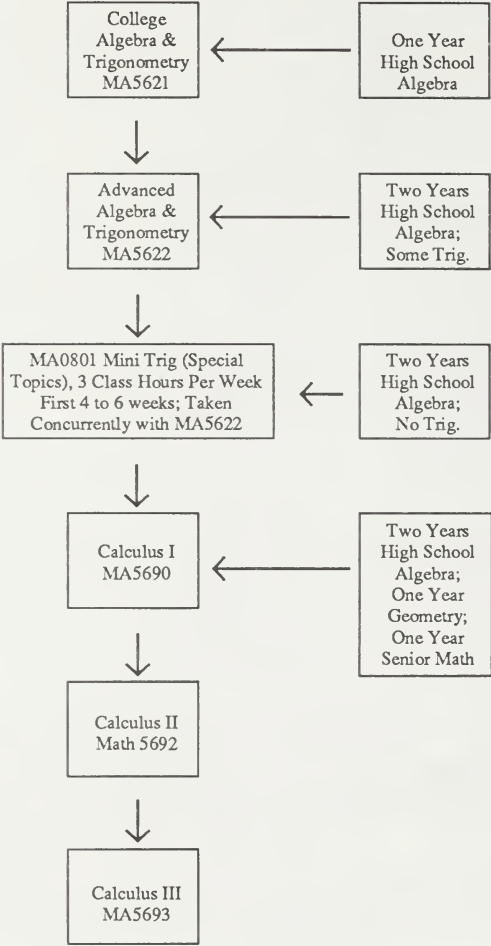


Note: If a mathematics course requires a prerequisite, it is recommended that the student earn a C or better in the prerequisite before attempting the next course in the sequence.

Note: Students transferring to a four year college should consider a bachelor's degree in science.

Computer Technology Math Sequence

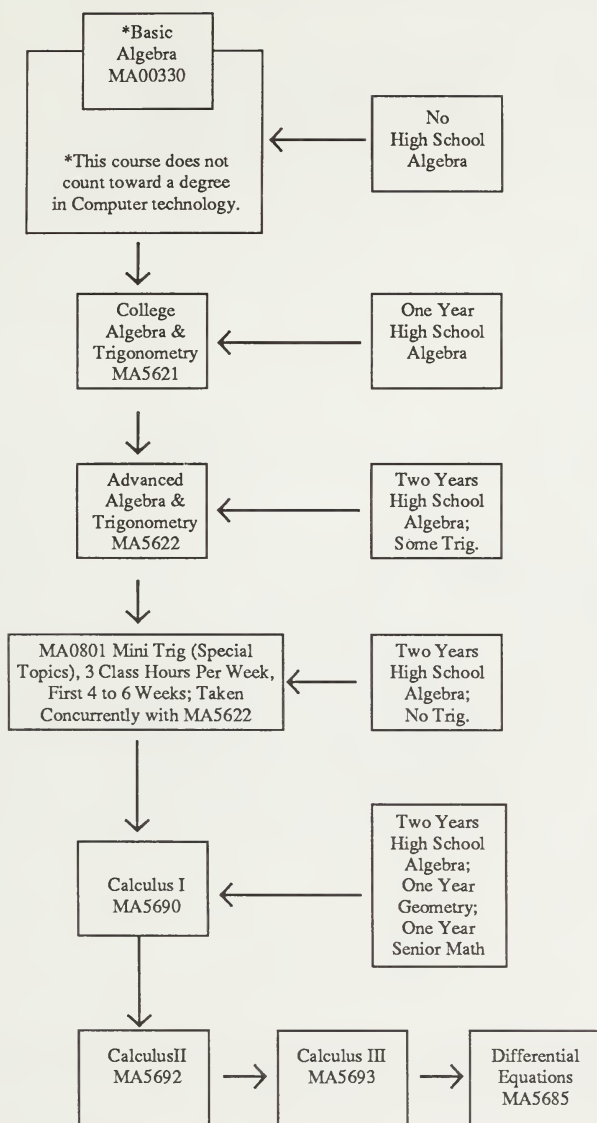
Science Option



Note: If a mathematics course requires a prerequisite, it is recommended that the student earn a C or better in the prerequisite before attempting the next course in the sequence.

Note: Students transferring to a four year college should consider a bachelor's degree in business.

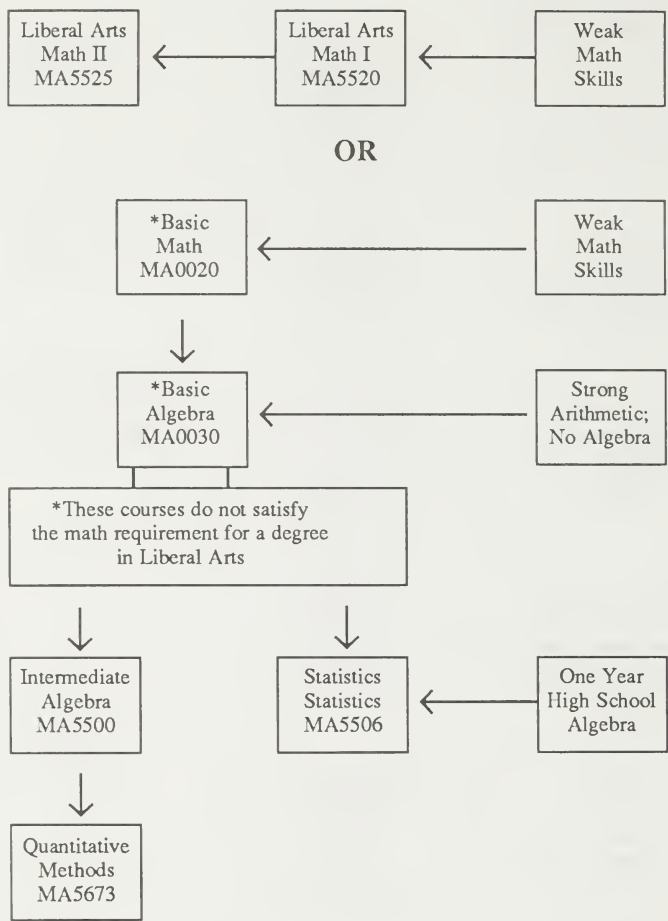
Engineering Math Sequence



Note: If a mathematics course requires a prerequisite, it is recommended that the student earn a C or better in the prerequisite before attempting the next course in the sequence.

Liberal Arts Math Sequence I

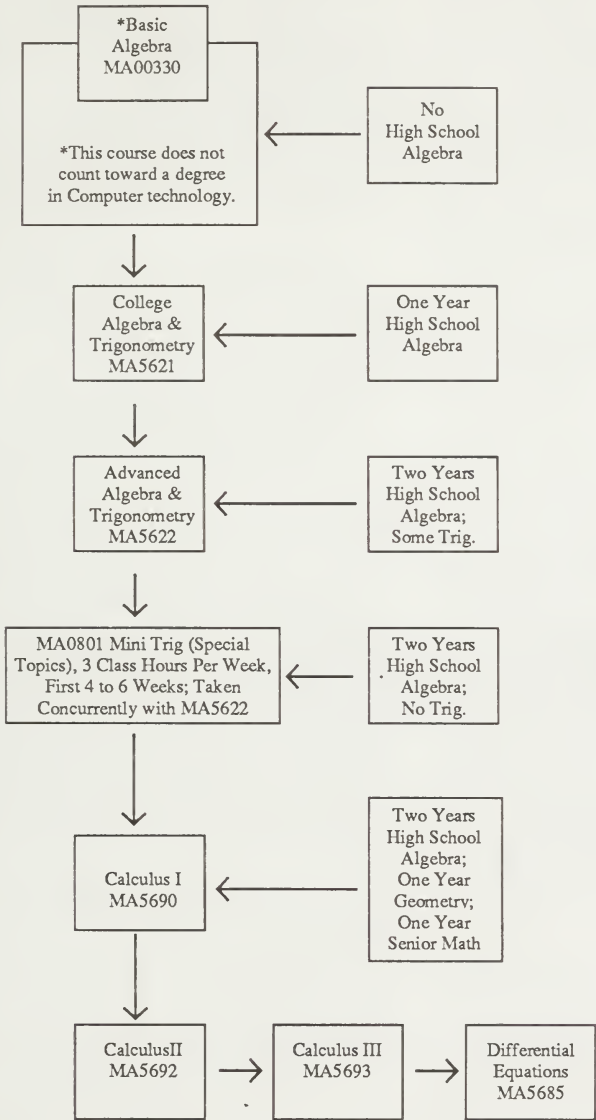
For students who wish to pursue careers in the humanities or social sciences.



Note: If a mathematics course requires a prerequisite, it is recommended that the student earn a C or better in the prerequisite course before attempting the next course in the sequence.

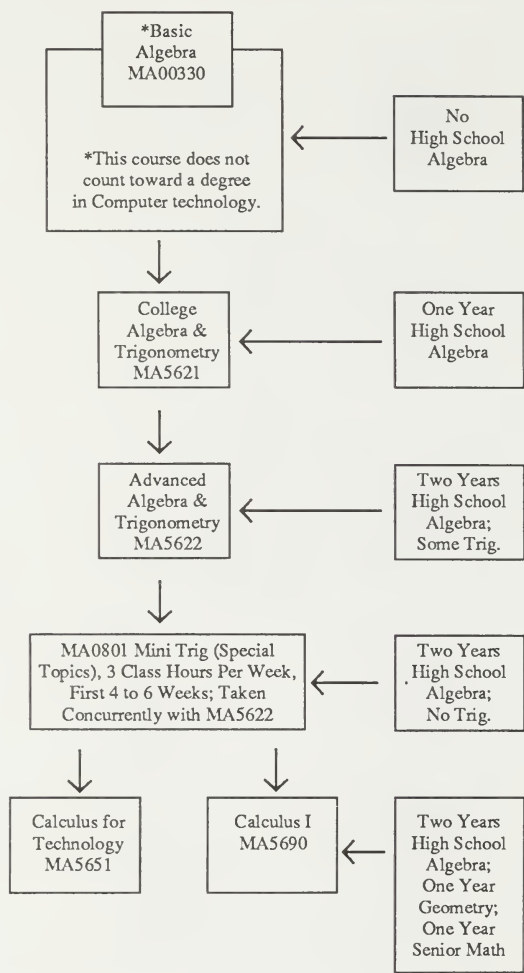
Liberal Arts Math Sequence II

For Students who wish to pursue careers in science, mathematics or medicine.



Note: If a mathematics course requires a prerequisite, it is recommended that the student earn a C or better in the prerequisite before attempting the next course in the sequence.

Technical Math Sequence



Note: If a mathematics course requires a prerequisite, it is recommended that the student earn a C or better in the prerequisite before attempting the next course in the sequence

Accounting

AC6600 Workshop in Basic Business & Bookkeeping:

A 1-semester course; 3 credit hours. This course includes the study of business papers, bank checks, reconciliations, payroll accounts, the use of journals, general subsidiary ledger and the preparation of financial statements. As part of the course, the student will be required to complete a practice set. It also provides practical experience in applying the fundamentals of accounting. 3 class hours per week.

AC6601 Introductory Accounting I: A 1-semester course; 3 credit hours. The basic concepts of accounting and uses of accounting data. Topics include the theory of debit and credit, use of journals and ledgers, analysis and recording of financial transactions, the accounting for both a service type business and a merchandising business, internal control, special journals and the control of cash transactions, accounts receivable, accounts payable, inventories, and plant and equipment. 4 class hours per week.

AC6602 Introductory Accounting II: A 1-semester course; 4 credit hours. A continuation of AC6601. Emphasis is on accounting for payrolls, partnerships, corporations, corporate stock, retained earnings, dividends, bonds, present value theory, marketable securities and investments, non-current assets and liabilities, and Statement of Changes in Financial Position. 4 class hours per week.

Prerequisite: AC6601 with a grade of C or better.

AC6651 Intermediate Accounting I: A 1-semester course; 4 credit hours. A detailed study of accounting theory and practice as it relates to financial accounting. Includes income statement and balance sheet presentation, cash, temporary investments, short-term receivables, inventories and current liabilities. 4 class hours per week. **Prerequisite:** AC6602.

AC6652 Intermediate Accounting II: A 1-semester course; 4 credit hours. A continuation of AC6651. Includes tangible assets, intangible assets, long-term liabilities, elements of corporate capital, investments, and the statement of changes in financial

position. 4 class hours per week.

Prerequisite: AC6602.

AC6671 Cost Accounting: A 1-semester course; 3 credit hours. An intensive study of cost methods; costing for materials, labor and factory overhead; job-order process, direct costing and the use of standards. 3 class hours per week. **Prerequisite:** AC6602.

AC6680 VITA (Volunteer Income Tax Assistance): A 1-semester course; 3 credit hours. Students will learn to prepare both federal and state tax forms for individuals and be exposed to the problems of more complicated returns. Students will also be prepared for the proficiency exams administered by the IRS and Massachusetts DOR. Students will offer volunteer tax assistance to individuals in the community. 3 class hours per week.

AC6682 Tax Accounting: A 1-semester course; 3 credit hours. An introduction to the principles of federal taxation with emphasis on history of income taxation, gross income, deductions, exemptions, accounting records, preparation and filing of tax returns. 3 class hours per week. **Prerequisite:** AC6602.

AC6683 Computerized Accounting Systems (CAS): A 1-semester course; 3 credit hours. This course is designed to provide both reinforcement of Introductory Accounting I and II and hands-on experience with a microcomputer and its role in business situations. System design theory and accounting theory will be used to show the flow of business information through data entry and financial preparation and reproduction. 2 class hours and 2 lab hours per week. **Prerequisite:** AC6602.

AC6691 Elements of Accounting I: A 1-semester course; 3 credit hours. Study of current accounting terminology, introduction to the basic principles and practices of accounting. Topics include double-entry system and the accounting equation, journals, ledgers, trial balances, work sheets, financial statements, cash and banking procedures and payroll records. In addition, students will gain exposure to microcomputer applications to integrate their knowledge of above topics to solution of relevant accounting problems. 3 class hours per week.

AC6692 Elements of Accounting II: A 1-semester course; 3 credit hours. Study of subsidiary ledgers, the voucher system, inventories, receivables and fixed assets. Introduction to accounting for partnerships and corporations. Opportunity for extensive practice through use of long problems and practice sets. In addition, students will gain exposure to microcomputer applications to the accounting cycle, to build upon their previous experience with microcomputers gained in Elements of Accounting I. 3 class hours per week. **Prerequisite:** AC6691.

AC6693 Elements of Accounting III: A 1-semester course; 3 credit hours. Intensive study of the voucher system, corporate organization and accounting, manufacturing accounts, budgeting and internal reporting, interim statements, and analysis of financial statements. 3 class hours per week. **Prerequisite:** AC6692 or equivalent.

AC6694 Simulation in Accounting: A 1-semester course; three credit hours. Students apply advanced accounting theory to the solution of comprehensive, detailed accounting problems representative of those encountered in contemporary business situations. Professional papers and relevant business cases are emphasized. 3 class hours per week. **Prerequisite:** AC6693 or equivalent.

Aerospace Studies

Note: Aerospace Studies courses are offered at the University of Lowell.

AS1010 The Air Force Today: A 1-semester course; 1 credit hour. This course deals with the Air Force in the contemporary world through a study of the total force structure, strategic offensive and defensive forces, general purpose forces, and aerospace support forces. 1 class hour per week. **Note:** Permission of instructor required.

AS1020 The Air Force Today: A 1-semester course; 1 credit hour. Continuation of AS1010. 1 class hour per week.

AS2010 The Development of Air Power: A 1-semester course; 1 credit hour. This course is a study of air power from balloons and dirigibles through the jet age; a historical

review of air power employment in military and non-military operations in support of national objectives; and a look at the evolution of air power concepts and doctrine. 1 class hour per week. **Note:** Permission of instructor required.

AS2020 The Development of Air Power: A 1-semester course; 1 credit hour. Continuation of AS2010. 1 class hour per week.

American Sign Language

Note: American Sign Language I, II and III are considered to be humanities/foreign language courses. Students seeking to transfer should consult the requirements of colleges to which they plan to transfer to determine whether they will be accepted either as humanities and/or foreign language courses for purposes of transfer.

AL1001 American Sign Language I: A 1-semester course; 4 credit hours. This is an intensive, direct immersion approach to learning American Sign Language (ASL). Basic grammatical rules in the use of ASL, basic ASL vocabulary, manual alphabet/numbers, and visual-gestural communication will be covered. Includes information about Deaf Culture, history of ASL and how it exists in society today. All lecture, laboratory activities and outside assignments are intended to develop basic competence in receptive and expressive use of ASL. The class will be taught primarily in ASL. 3 class hours and 3 lab hours per week. **Prerequisite:** Permission of the coordinator.

AL1002 American Sign Language II: A 1-semester course; 4 credit hours. Designed to be a continuation of American Sign Language I. Complex grammatical rules in the use of ASL, additional ASL vocabulary, finger-spelling/numbers, and visual-gestural communication will be covered. Includes information about Deaf Culture. All lecture, laboratory activities and outside assignments are intended to further develop receptive and expressive competence in the use of ASL. 3 class hours and 3 lab hours per week. **Prerequisite:** American Sign Language I or

Conversational American Sign Language I and II or Basic American Sign Language I, II, III and IV with a grade of C or better and permission of the coordinator.

AL2003 American Sign Language III: A 1-semester course; 4 credit hours. Designed to be a continuation of American Sign Language II. Intended to refine and build American Sign Language (ASL) competence in and performance of all ASL grammatical features and ASL variations covered in previous courses. Receptive and expressive abilities enhanced through exposure to selected stylistic, regional, social, ethnic, socially restricted, and age-related ASL renditions. Additional ASL vocabulary will be covered through text analysis. Includes information on Deaf Culture. All lecture, laboratory activities and outside assignments focus on systematically integrating all materials covered in this and all prior courses. This class will be taught primarily in ASL. 3 class hours and 3 lab hours per week. **Prerequisite:** American Sign Language II with a grade of C or better.

Banking

BK6601 Principles of Banking: A 1-semester course; 3 credit hours. Survey of banking's relationship to the total economy and the functional relationships of departments within the bank. Develops the framework for more specialized study of the banking institution. 3 class hours per week.

BK6602 Savings & Time Deposit Banking: A 1-semester course; 3 credit hours. A fundamental study of the historical development and economic function of savings institutions and the savings process. 3 class hours per week.

BK6611 Money and Banking: A 1-semester course; 3 credit hours. The practical aspects of money and banking; emphasis is placed on such problems as economic stabilization, types of spending, the role of gold, limitations of central bank control, government fiscal policy, balance of payments and foreign exchange showing their repercussions on the banking industry in affecting yield curves and the structuring of portfolios. 3 class hours per

week.

BK6614 Commercial Bank Management: A 1-semester course; 3 credit hours. This course is designed as an introduction to the handling of day-to-day bank activities such as: the formulation of objectives and policies; the management of assets and liabilities; the sources and uses of funds; the administration of deposits, loans and other investments; and the short-term management of funds. 3 class hours per week.

BK6621 Corporate Banking: A Practical Approach to Lending: A 1-semester course; 3 credit hours. A study of the banking aspects of the lending environment. The lending process, the loan request, financial analysis, loan structuring and loan administration. 3 class hours per week.

BK6622 Real Estate Finance: A 1-semester course; 3 credit hours. Examination of mortgage credit in the United States and the structure of the mortgage market. An analysis of the management considerations in mortgage lending and portfolio management. 3 class hours per week.

BK6623 Consumer Lending: A 1-semester course; 3 credit hours. This course is designed to provide an overview of the consumer credit operation. It examines the role of consumer credit in overall banking operations and offers an improved understanding of the consumer credit function within a bank. 3 class hours per week.

BK6624 Introduction to Commercial Lending: A 1-semester course; 3 credit hours. This course is designed as an introduction to commercial lending in the banking industry and in the economy as a whole. Basic analytical and technical topics include: characteristics of the business loan customer and the fundamentals of commercial loan products, pricing, decision-making, support, and documentation, legal and regulatory requirements, and overall management of the commercial lending function. 3 class hours per week.

BK6651 Analyzing Financial Statements: A 1-semester course; 3 credit hours. Basic consideration in financial statement analysis, basic financial ratios, analysis of working

capital, and other items. 3 class hours per week.

BK6652 Law and Banking Principles: A 1-semester course; 3 credit hours. This course is designed as an overview of the legal aspects of banking with special emphasis on the Uniform Commercial Code. Topics include up-to-date summaries of law pertaining to contracts, real estate, bankruptcy, and the legal implications of consumer lending. 3 class hours per week.

BK6653 Marketing for Bankers: A 1-semester course; 3 credit hours. A study of the concepts and philosophies of marketing, information research and target together with the marketing mix, product strategy, distribution strategy, advertising and sales promotion and pricing strategy. 3 class hours per week.

BK6654 Law and Banking Applications: A 1-semester course; 3 credit hours. This course is an introduction to laws pertaining to secured transactions, letters of credit and the bank collection process. Topics include check losses and legal issues related to processing checks, and secured transactions legal issues such as collateral, perfection and default. 3 class hours per week.

BK6666 Retail Banking: A 1-semester course; 3 credit hours. In this course, students will learn how to effectively use accepted management principles in the banking environment. The first part of the course is dedicated to retail management, the second to sales management and the third will emphasize financial performance of banks. 3 class hours per week.

Biology

BI5510 Human Biology: A 1-semester course; 3 credit hours. A basic study of the structure and function of the human body. Emphasis will be placed on the interrelationships among the systems. This course introduces the major biological principles through the study of the human body. 3 class hours per week.

BI5511 Introductory Biology: Botany: A 1-semester course; 4 credit hours. An introductory biology course based on the study of

plants. The lectures include a gross and microscopic survey of plant anatomy from algae to the higher vascular plants noting the evolutionary trends, their economic relationship with man, and the fundamentals of physiology and morphology of the higher vascular plants. 3 class hours and 2 lab hours per week.

BI5514 Introductory Biology: Zoology: A 1-semester course; 4 credit hours. An introductory biology course based on the study of animals. The lectures include a survey of major invertebrate and vertebrate animals with emphasis on their structure, adaptations, evolution and natural history. Laboratory work emphasizes identification and structural form of the major phyla of animals. 3 class hours and 2 lab hours per week.

BI5515 Principles of Biology: A 1-semester course; 4 credit hours. A course dealing with the biological principles common to both plant and animal biology. These principles include the nature of chemical systems, cellular structure and functioning, genetics, ecology, and evolution. 3 class hours and 2 lab hours per week.

BI5519 Anatomy & Physiology I: A 1-semester course; 4 credit hours. Some basic principles of biology are introduced. These are followed by an introduction to the study of the structure and functioning of the human body. Systems covered are: integumentary, skeletal, muscular and nervous. Emphasis will be placed on the interrelationships between the systems. Related topics such as diseases of the systems will be integrated where applicable. Laboratory work will include experiments, dissection, microscope work, and the study of charts and models. 3 class hours and 2 lab hours per week.

BI5520 Anatomy & Physiology II: A 1-semester course; 4 credit hours. A continuation of BI5519. Systems covered are: circulatory, endocrine, reproductive, urinary, digestive and respiratory. 3 class hours and 2 lab hours per week.

BI5530 Fundamentals of the Disease Process: A 1-semester course; 3 credit hours. Topics include causes of disease, cellular

injury, inflammatory processes, neoplasms, metabolic disorders, endocrine imbalances, disturbances in blood and body fluids, infectious diseases, physical and chemical injuries, hereditary diseases and congenital defects. A survey of the basic process of disease, types of medication, diagnostic measures and types of treatment will be discussed relating to the following systems: integumentary, musculoskeletal, nervous, cardiovascular, respiratory, gastrointestinal, genitourinary and organs of special sense (eye and ear). 3 class hours per week.

Prerequisite: MR6605/MR6606 Medical Terminology I and II or permission of instructor, and BI5519/BI5520 Anatomy and Physiology I and II or permission of instructor.

BI5553 Microbiology: A 1-semester course; 4 credit hours. The biology of bacteria and microorganisms is studied. Laboratory work emphasizes the sterile technique. Immunology is discussed. 3 class hours and 3 lab hours per week **Prerequisite:** One year of introductory biology at the college level or permission of the instructor.

Business Seminar

BU1000 Business Career Development Seminar: A 1-semester course; 1 credit hour. This course is designed to provide Field Experience students with the necessary skills to conduct a successful job search. Students will have the opportunity to analyze their interests and skills in relation to career types, develop a professional resume and participate in simulated interviews. Guest speakers, group discussions and video tapes will be emphasized. 1 class hour per week.

Chemistry

CH4401 Chemistry in Your Life: A 1-semester course; 4 credit hours. This course will meet the four-credit natural science requirement of many associate degree programs. The course will be topic oriented. The student will study such topics as: nuclear reactions, energy from chemical reactions,

water and its problems, chemistry of life, air pollution, drugs and medicines and other chemistry topics which are determined to be of use to the student. Some examples of the experiments would be: recycling aluminum from aluminum cans, dyeing material, determining the amount of vitamin C in orange juice, finding the acid and alkali content of some consumer products, and making soap and electroplating. 3 class hours and 2 lab hours.

CH4450 Basic Chemistry for Industry: A 1-semester course; 4 credit hours. This course covers understanding of chemical and physical changes; the metric system; the atom; the period table; elements and compounds; formulas and compounds; balancing equations; electricity as it applies to solutions; phase changes; liquids and solids; solutions; electrolytes; acids and bases; buffers; oxidation and reduction reactions; and solubilities. **Prerequisite:** Knowledge of Basic Mathematics (by course or competency exam).

CH5501 General Chemistry I: A 1-semester course; 4 credit hours. Deals with inorganic and physical chemistry. The study of the structure of atoms and the periodic nature of the elements. The examination of the relationship of energy and the elements to form compounds and the three physical states of matter: solid, liquid and gas. 3 class hours and 3 lab hours per week. **Prerequisite:** One year of high school chemistry and one year of pre-college math.

CH5502 General Chemistry II: A 1-semester course; 4 credit hours. A continuation of General Chemistry I, dealing with physical and inorganic chemistry. Examines in detail the mechanical, thermal and electrical changes as demonstrated in solution theory, electrochemistry, chemical kinetics and chemical equilibrium. A brief introduction to organic chemistry is given. 3 class hours and 3 lab hours per week. **Prerequisite:** CH5501.

CH5503 Introductory Chemistry I: A 1-semester course; 4 credit hours. The course covers the basic understanding of atomic structure of the elements and periodic table.

The study of chemical bonding, nomenclature, chemical equations, formula calculations and starchimetry is undertaken. 3 class hours and 2 lab hours per week. **Prerequisite:** A course in algebra.

CH5504 Introductory Chemistry II:

Inorganic Chemistry: A 1-semester course; 4 credits hours. The course covers the study of solutions, acids, bases and neutralization. The application of physical chemical theory to inorganic chemistry. A brief review of organic chemistry is undertaken with special emphasis on how this aspect of chemistry relates to biological systems. 3 class hours and 2 lab hours per week. **Prerequisite:** CH5503.

CH5507 Introductory Chemistry II:

Organic: A 1-semester course; 4 credit hours. Organic chemistry is the study of organic compounds. The course includes the synthesis of aliphatic and aromatic compounds from petroleum and coal derivatives and the study of the functional groups of these primary series. The course will provide a foundation for the study of complex carbon compounds in a technological society with special emphasis towards the understanding of the chemistry of the life sciences. 3 class hours and 3 lab hours per week. **Prerequisite:** CH5503 or permission of instructor.

Civil Technology

CE6600 Introductory Surveying: A 1-semester course; 4 credit hours. The course is designed to give a student an introduction to basic surveying techniques on a directed studies basis. Topics covered include operation of surveying instruments, steel taping, taking field notes, level note reductions and tape corrections. 3 class hours and 1 3-hour lab per week in conjunction with CE6601 Surveying 1. **Note:** To be taken only on advice of instructor.

CE6601 Surveying I: A 1-semester course; 4 credit hours. The course is designed to give the student proficiency in the use of surveying instruments and in performing necessary calculations. Horizontal, vertical and angular measurements are made and length, elevations, bearings and traverse computations with

appropriate adjustments and corrections are made. Neat note taking and neat calculations are stressed. 3 class hours and 3 lab hours per week.

CE6602 Surveying II: A 1-semester course; 4 credit hours. The course is designed to give the student more proficiency in surveying measurements and calculations involved in horizontal and vertical curves, areas, stadia measurements, topographic surveys, photogrammetric surveys and land surveys. Use of modern instruments and calculation techniques are stressed. 3 class hours and 3 lab hours per week. **Prerequisite:** MA5621 and CE6601 or equivalent experience.

CE6612 Drawing for Civil Technology: A 1-semester course; 1 credit hour. A course designed to give the student a good knowledge of some of the specialized drafting techniques required in the practice of civil technology. Topics covered are plan drawing, cross section drawing, profile drawing, inking techniques, printing techniques, etc. 3 lab hours per week. **Prerequisite:** CE6601.

CE6620 Overview of Civil Engineering: A 1-semester course; 3 credit hours. This course is designed to provide the student with a broad overview of the functions and practices of Civil Engineering as they apply to engineering and surveying firms. The general subject matters to be introduced include statics, strength of materials, transportation and sanitary engineering, soil mechanics, and structural analysis and design. Some topics discussed are to familiarize the student with a knowledge of the action of forces on structural systems, the relationship between externally applied forces and the internally induced stresses in various types of structural members and parts, the fundamental principles involved in the design of steel parts, and the fundamental principles involved in the design of steel and reinforced concrete structures including the basic analysis and design techniques specified by modern building codes. Other topics familiarize the student with forms of modern transportation systems, including the advantages, disadvantages and peculiarities of each system, and the knowledge of the problems and solutions of the mechanics of soil, water supply, and

sewerage. 3 class hours per week.

CE6625 Civil Engineering Computing

Applications: A 1-semester course; 4 credit hours. The course is designed to acquaint the student with a basic working knowledge of the utilization of computers to obtain solutions to the great quantities of calculations necessary in dealing with the problems encountered in Civil Engineering practice. Starting with how to use a computer without the study of specific computer programming techniques, this course offers the student a background to the introduction of a systems approach to typical Civil Engineering problems presently being studied, and their solution using computer applications from currently available software packages. 3 class hours and 3 lab hours per week. **Prerequisite:** CE6601 Surveying I and CE6620 Overview of Civil Engineering.

CE6651 Statics: A 1-semester course; 3 credit hours. Course is designed to give students a knowledge of the action of forces on various mechanical and structural systems; systems include beams, trusses, frames and arches. Topics on friction, centroids of areas and moments of inertia are also discussed. Basic principles of free body diagrams, equations of equilibrium, method of joints and method of sections are presented. 3 class hours per week. **Prerequisite:** MA5621.

CE6653 Strength of Materials: A 1-semester course; 4 credit hours. The course is designed to acquaint the student with the relationship between externally applied forces and the internally induced stresses in various types of structural members and parts, such as bolts, rivets, shafts, pressure tanks, beams and columns. Also covered is the relationship between the externally applied forces and the resulting deformations. Particular attention is given to beam bending, column loadings, tension in shafts, centroids and moments of inertias and combined stresses in structural elements. 3 class hours and 3 lab hours per week. **Prerequisite:** CE6651 or equivalent.

CE6654 Structural Analysis & Design: A 1-semester course; 3 credit hours. The course includes the fundamental principles involved in the design of steel and reinforced concrete

structures. The student learns the basic analysis and design techniques for beams, columns, walls, footings, retaining walls, floor systems and flat slabs as specified by modern building codes. Fundamentals of timber design are also covered. 3 class hours per week.

CE6665 Transportation Engineering: A 1-semester course; 3 credit hours. Designed to familiarize the student with all forms of modern transportation systems; the advantages, disadvantages and peculiarities of each system. Systems studied include highway, railroad, airplane, water, pipelines, conveyors and undersea vehicles. 3 class hours per week.

CE6671 Sanitary Engineering: A 1-semester course; 3 credit hours. The course is designed to give the student a knowledge of the problems and solutions of water supply and sewerage. The course considers the problems of water from rainfall, through the storage, storm drainage, hydraulics, distribution and treatment of drainage water; collection, disposal and treatment of sanitary sewage. Water and storm drainage and sanitary sewerage systems design is stressed. 3 class hours per week.

CE6672 Soil Mechanics: A 1-semester course; 4 credit hours. The course is designed to give the student a basic knowledge of the problems of soil. The course teaches the student to understand and evaluate the properties of soil materials. Lectures are reinforced by the use of a soil testing laboratory which enables the student to develop a thorough knowledge of soil testing techniques and proper use of experimental data. The course also deals with the topics of the interaction of soils and groundwater, consolidation of soil and settlement of structures, and the bearing capacity of soil under foundations. 3 class and 3 lab hours per week.

CE6682 Field Engineering Problems: A 1-semester course; 1 credit hour. The course is designed to give the student practical field problems in surveying and civil engineering. Construction surveying, topographic surveying, subdivision layout and control are stressed. Advanced field and practical office

techniques are covered. 3 lab hours per week.

Prerequisite: CE6602.

Computer Technology

CT6601 Fundamentals of Digital Logic: A 1-semester course; 3 credit hours. The evolution of data processing or automatic computation. The mechanics of automatic computation including number system, logic, codes, arithmetic operations and organizations are covered in detail. 3 class hours per week.

CT6611 RPG Programming: A 1-semester course; 4 credit hours. An introduction to RPG II Business Programming with applications. Report Program Generator topics include sequential file processing, business calculations, reports with headers, control breaks and total lines, simple table or array processing techniques and interactive concepts. 3 class hours and 3 lab hours per week. **Prerequisite:** CT6633 or previous course in programming.

CT6620 Computer Programming I: A 1-semester course; 4 credit hours. An introduction to problem-solving methods and algorithm development for computer programming. Program specification, design, coding, testing and documentation are emphasized in the development of good programming technique. The programming language normally used is Pascal. 3 class hours and 3 laboratory hours per week. **Prerequisite:** One year of high school algebra or equivalent.

CT6622 FORTRAN Programming: A 1-semester course; 4 credit hours. A comprehensive study of FORTRAN with business and mathematical applications. Topics include the processing, data types, array manipulation, external programs, and interactive programming techniques. 3 class hours and 3 lab hours per week. **Prerequisite:** CT6633 or CT6620 or CT6682.

CT6630 Introduction to Personal Computers: A 1-semester course; 3 credit hours. This introductory course will focus on learning how to use a personal computer. Students will gain practical experience by using the personal computer and pre-packaged

software. This software will include word processing, electronic spreadsheets, graphics, and data base management. 2 class hours and 2 lab hours per week.

CT6633 Introduction to Data Processing with BASIC: A 1-semester course; 4 credit hours. An introductory data processing course focusing on the fundamental concepts of computer hardware and software. Basic concepts of computer technology, programming and processing with an emphasis on new programming methodologies and hardware advances in general, and on the BASIC language in particular. 3 class hours and 3 lab hours per week.

CT6638 BASIC Programming with Business Applications: A 1-semester course; 4 credit hours. This course will build upon the introduction to the BASIC programming language presented in CT6633 Introduction to Data Processing with BASIC. In addition to moving from minimal to extended BASIC, the course will concentrate on maximizing the students' use of the computer's problem-solving capability through the preparation of a variety of application programs. Material covered will include random numbers, subscripted variables, string manipulation, sub routines, functions, file processing and text editing. 3 lecture hours and 3 lab hours per week. **Prerequisite:** CT6633 and/or working knowledge of the BASIC programming language.

CT6640 Data Structures: A 1-semester course; 4 credit hours. Data Structures focuses on common methods of organizing information to be used in problem solving. Emphasis will be on programming in a topdown structured design style utilizing a variety of data structures. The student, after completing the course, will be able to solve a wide variety of programming problems and be well prepared for further studies in Computer Science. 3 class hours and 3 lab hours per week. **Prerequisite:** CT6620.

CT6641 Operating Systems: A 1-semester course; 4 credit hours. An introduction to Computer Operating Systems. Operating system functions and theory will be covered for a variety of computers from microcompu-

ters to mainframes. Operating system examples and laboratory work may include MS-DOS, CP/M, UNIX, and PICK, but will be frequently up-dated to reflect rapid changes in the field. Other topics include multiprogramming multiuser systems, system monitoring and interfacing computers. 3 class hours and 3 lab hours per week. **Prerequisite:** A programming language.

CT6643 Computer Operations Experience:

A 1-semester course; 4 credit hours. A hands-on approach to computer operations giving practical experience with all aspects of computer operations from bootstrap to backup. Topics included are operations management, peripheral equipment, operating procedures, monitoring processes and ethical issues. Class time will be used for fundamentals; laboratory time will be individually scheduled work on a live computer system. 2 class hours and 4 lab hours per week.

Prerequisite: CT6641 Operating Systems or equivalent experience. Enrollment limited.

CT6649 Assembly Language Programming:

A 1-semester course; 4 credit hours. Basics of CPU, BCD arithmetic, instruction sets, addressing techniques, input/output, and bit manipulation are covered. Examples will stress business problems. 3 class hours and 3 lab hours per week. **Prerequisite:** CT6620 or the successful completion of another computer language.

CT6651 Advanced Assembly Language Programming:

A 1-semester course; 4 credit hours. A thorough study of the absolute machine language and the assembler for the computer on campus. Fixed and floating point instructions, addressing techniques, input/output, relocation, macros and subroutines are covered. 3 class hours and 3 lab hours per week. **Prerequisite:** CT6649.

CT6652 COBOL Programming:

A 1-semester course; 4 credit hours. An introduction to Structured COBOL Programming with applications. COBOL topics include sequential file processing, business calculations, reports with headers, control breaks, total lines, simple table or array processing techniques and interactive concepts. 3 class hours and 3 lab hours per week. **Prerequisite:**

CT6633 or CT6620.

CT6653 Advanced COBOL Programming:

A 1-semester course; 4 credit hours. This course covers the advanced concepts of the COBOL programming language. Topics include table and array processing techniques, sequential and index sequential disk files, sort routines and interactive program processing techniques, and data base concepts. 3 class hours and 3 lab hours per week. **Prerequisite:** CT6652.

CT6661 Advanced Computer Systems Programming:

A 1-semester course; 4 credit hours. Advanced topics such as disk and the file organization, interrupt programming, linkage of programs written in different languages plus a study of the various instruction formats and types of instructions found in modern equipment. 3 class hours and 3 lab hours per week. **Prerequisite:** CT6651.

CT6670 Introduction to CAD/CAM:

A 1-semester course; 3 credit hours. This course is an introduction to Computer Aided Drafting and Design Systems and Computer Aided Manufacturing. It will cover the role of computers, robots, automated production, and humanistic approaches in manufacturing. Students will gain an understanding of the difficulties and challenges that lie on the path toward integration of computers into the manufacturing environment. 3 class hours per week.

CT6676 Business Systems Analysis and Design:

A 1-semester course; 4 credit hours. This course will introduce the student to the methods of systems analysis and the skills required to increase business productivity using the full potential of computer-related technologies. Emphasis will be placed on the structured, life-cycle process for the design of usable computer-based systems as the student applies systems analyst skills in the completion of a series of case study-related lab assignments and a semester-long project examining and making recommendations regarding a specific working business. Attention will also be directed at developing the professional skills necessary to performing productively in a business environment. 3 class hours and 3 lab hours per week.

Prerequisite: CT6652.

CT6680 Advanced Personal Computer Applications:

A 1-semester course; 4 credit hours. This course focuses on decision-making and how the solution to problems can be supported by a computer-based information system. Software covered includes text editing, spreadsheets, data base management, graphics, integrated software, vertical application programs and data communications. This course meets the requirements as a technical elective for Computer Technology students and as an elective for students in other degree programs. 3 class hours and 3 lab hours per week. **Prerequisite:** CT6630.

CT6682 Computer Application in Engineering and Technology:

A 1-semester course; 4 credit hours. The course is designed to give the student a knowledge of the computer solutions to the great quantities of calculations that are necessary in practice. Basic computer operation and programming techniques are covered with emphasis on such languages as BASIC and FORTRAN. Students who have taken BASIC and/or FORTRAN programming may not take this course. 3 class hours and 3 lab hours per week. **Prerequisite:** MA5621 concurrently.

CT6683 Computer System Troubleshooting:

A 1-semester course; 4 credit hours. An overview to the computer system including the architecture of a CPU and computer operations. A study is made of decoding and buffering circuits, memory interfacing and Input/Output interfacing both parallel and serial. These concepts are illustrated via the S-100 bus. Computer System fault analysis and troubleshooting techniques are also covered as are such tools as signature and logic analyzers. 3 class hours and 3 lab hours per week. **Prerequisite:** ET6690.

CT6684 C Programming Language: A 1-semester course; 4 credit hours. A general study of the C Programming Language. This study will include application programs for systems, business, science, and technical areas. It will relate to real time applications by illustrating the integration of assembly language routines within the C coded

programs. The study will also include treatment of how C handles data types and declarations such as: char, int, unsigned, long and float; primaries like constants, variables, addresses, functions and structures; expressions using both unary and binary operators; statements including both expressions and control types; and the various preprocessing functions. A major programming project will be required. 3 class hours and 3 laboratory hours per week. **Prerequisite:** ET6690 and a major programming language or CT6649.

Cooperative Education

CI4401 Career Internship I:

A 1-semester course; 3 credit hours. Career Internship is designed to provide students with off-campus experiences related to their educational needs and/or career objectives, subject to the guidelines established by the student's academic department and the Office of Cooperative Education. Grade is based upon supervisor's evaluation of student growth, coordinator's evaluation of student performance, and advisor evaluation of what took place during the semester. A minimum of 140 hours of work experience is required per semester. **Prerequisite:** Prior approval of Academic Coordinator responsible for student's program and the Office of Cooperative Education. Students are expected to work in volunteer/nonpaid positions.

CI4402 Career Internship II:

A 1-semester course; 3 credit hours. A second course designed to provide additional off-campus experiences in volunteer positions related to student's academic program and/or career objectives, subject to the guidelines established by student's academic department and the Office of Cooperative Education. Grade is based upon employer's evaluation of student's growth, coordinator's evaluation of student performance, and advisor's evaluation of what took place during the semester. Students are expected to increase their responsibilities over and above what was performed in either Cooperative Education I (CO4401) or Career Internship I (CI4401). A minimum of 140 hours of work experience is required per

semester. **Prerequisite:** Prior approval of Academic Coordinator responsible for student's program and the Office of Cooperative Education. Students are expected to work in volunteer/nonpaid positions.

CO4401 Cooperative Education I: A 1-semester course; 3 credit hours. Cooperative Education is an experiential approach designed to provide training for students seeking to enter or re-enter a career field. Students gain practical experiences that are related to their academic program and/or career goals, subject to the guidelines established by the appropriate academic department and the Office of Cooperative Education. Each student will be expected to participate in one or more workshops during the semester. Students develop a list of objectives to be accomplished during the semester and will be evaluated by the worksite supervisor, the Coop Coordinator and the student at the end of the semester. A minimum of 180 hours of work experience is required per semester. **Prerequisite:** Prior approval of the Director of Cooperative Education & Placement and the Academic Coordinator responsible for the student's program.

CO4402 Cooperative Education II: A 1-semester course; 3 credit hours. A second course in Cooperative Education is designed to provide students with additional off-campus experiences related to their educational needs and career goals, subject to the guidelines established by the appropriate academic department and the Office of Cooperative Education. Students will be expected to attend a series of workshops during the semester. Grade is based upon employer's academic evaluation of student growth, coordinator's evaluation of student performance, and a self-evaluation of work accomplished by the student. Students are expected to increase their responsibility over and above what was performed during CO4401 Cooperative Education I or CI4401 Career Internship I. A minimum of 180 hours of work experience is required per semester. **Prerequisite:** Cooperative Education I or Career Internship I and prior approval of the Director of Cooperative Education &

Placement and the Academic Coordinator responsible for the student's program.

Criminal Justice

CJ3601 Concepts of Criminal Law: A 1-semester course; 3 credit hours. The substantive law of crimes, its historical development and philosophy. This course includes classification of crime, definitions and elements of specific crimes, parties to a crime and defense of a crime. 3 class hours per week.

CJ3603 Introduction to Criminal Justice: A 1-semester course; 3 credit hours. The history, philosophy and function of the criminal justice system in America, identifying the various subsystems and role expectations. An overview of crime, punishment and rehabilitation ethics, education and training for professionals in the system. 3 class hours per week.

CJ3607 Functions of Police in Modern Society: A 1-semester course; 3 credit hours. The functions of the police in contemporary society will be analyzed in their historical, sociological, and political context. Particular emphasis will be placed upon the conflicting role expectations facing the police in a democracy. Special topics included will be police discretion, corruption, leadership and professionalization. 3 class hours per week.

CJ3608 Introduction to Corrections: A 1-semester course; 3 credit hours. An introduction and overview of fundamental processes, trends and practices of the correctional institutions. Dealing with but not limited to such concepts as institutional treatment, prisoner rights, parole, pre-release centers and government support of ex-offenders. 3 class hours per week.

CJ3609 The Criminal Court System: A 1-semester course; 3 credit hours. An examination of the concepts, values and procedures of the criminal court system with an emphasis on the district and juvenile court structures. 3 class hours per week.

CJ3667 Crisis Intervention in the Criminal Justice System: A 1-semester course; 3 credit hours. How persons involved in Criminal

Justice apply crisis theory, manage interpersonal conflict and use effective techniques of crisis intervention. Specific crisis situations frequently and somewhat uniquely encountered will be considered. These include, but are not limited to, family disputes, forcible rape, child abuse, potential suicide and hostage situations (including terrorism). 3 class hours per week.

CJ3670 Senior Seminar: A 1-semester course; 3 credit hours. Forum for criminal justice students focusing upon special issues in criminal justice. A primary emphasis will be the student's development of a "Senior Paper" which analyzes an agency in light of course work to date. 3 class hours per week.

CJ3672 Field Practicum Experience: A 1-semester course; 3 credit hours. Course for preservice students. Planned program of observation in selected criminal justice agencies representing the major components of the system. The student will select an agency provided by the coordinator and assist in activities deemed appropriate by the agency. Students shall be required to maintain a journal as specified by the field supervisor. 1 class hour and 8 field hours per week.

Prerequisite: Full-time enrollment in the Day Division's Criminal Justice Program. Student must be in his/her fourth semester.

Dental Assistant

DA0100 Dental Assisting I: A 1-semester course; 5 credit hours. This course provides the student with an understanding of materials commonly used in the dental office, dental history, principles of dental jurisprudence and ethics, and an overview of the dental assistant's role in dental specialties such as oral surgery, orthodontics, endodontics and restorative dentistry. The student will perform laboratory procedures associated with chairside dental assisting. 4 class hours and 3 lab hours per week. **Prerequisite:** Acceptance into the Dental Assistant Program.

DA0105 Dental Clinical I: A 1-semester course; 4 credit hours. This course is designed to provide the student with the principles of four-handed dentistry, instrument identifica-

tion and use, and aseptic techniques including the principles of microbiology and sterilization. 2 class hours and 6 lab hours per week.

Prerequisite: Acceptance into the Dental Assistant Program.

DA0110 Oral Science I: A 1-semester course; 3 credit hours. This course provides the student with an understanding of the development, form and function of the oral cavity by examining oral anatomy, oral histology, oral embryology, and head and neck anatomy. 3 class hours per week.

Prerequisite: Acceptance into the Dental Assistant Program.

DA0130 Dental Radiology I: A 1-semester course; 2 credit hours. This course is designed to examine the theoretical aspects of radiation production, safety, biological effects, paralleling exposure technique, darkroom processing, film mounting and radiographic interpretation. Proficiency in radiographic technique will be accomplished on a manikin. 1 class hour and 2 lab hours per week.

Prerequisite: Acceptance into the Dental Assistant Program.

DA0200 Dental Assisting II: A 5-week course; 3 credit hours. This course is a continuation of Dental Assisting I. The dental specialties periodontics, pedodontics and prosthodontics will be studied as well as preventive dentistry, nutritional counseling, dental emergencies and dental office management. The student will construct dental laboratory appliances associated with chairside dental assisting. 6 class hours and 6 lab hours per week. **Prerequisite:** Dental Assisting I with a grade of C or better.

DA0205 Dental Clinical II: A 5-week course; 1 credit hour. This course is a continuation of DA0105. Students will gain clinical experience in dietary counseling, preventive plaque control instructions, office management procedures, emergency procedures, and assisting with periodontic, pedodontic, and prosthodontic techniques. 6 lab hours per week. **Prerequisite:** Dental Clinical I with a grade of C or better.

DA0245 Oral Science II: A 5-week course; 1 credit hour. This course is designed to provide the student with an understanding of diseases

of the oral cavity and pharmacological agents that are utilized in the dental office. 3 class hours per week. **Prerequisite:** Oral Science I with a grade of C or better.

DA0250 Dental Radiology II: A 5-week course; 1 credit hour. This course is a continuation of Dental Radiology I. The bisecting angle technique of exposing dental films will be emphasized. Proper radiographic technique will be developed on a manikin prior to exposing radiographs on patients. 6 lab hours per week. **Prerequisite:** Dental Radiology I with a grade of C or better.

DA0275 Dental Seminar: A half-semester course; 1 credit hour. This course provides the student with an opportunity to analyze dental assisting procedures, patient care in the dental office and practicum experiences, and to hear scheduled guest lecturers from the dental community. 2 class hours per week for 8 weeks.

DA0280 Dental Assisting Practicum: A 10-week course; 5 credit hours. This course requires a minimum of 300 hours of clinical experience in various dental offices where the student will perform chairside dental skills under the supervision of the dentist and his/her staff. Students will be assigned on a rotational basis with emphasis on general dentistry. Liaison with the students and the dental offices is maintained by the Coordinator of the Dental Assistant Program. 30 practicum hours per week for ten weeks.

Prerequisite: A grade of C or better in all Dental Assistant courses prior to practicum assignment.

Early Childhood Education

Note: All course prefaced CC and ED0402 are restricted to students accepted and enrolled in the Early Childhood Education program. Other students may elect these courses only with the permission of the Early Childhood Education program coordinator.

CC2201 Introduction to Early Childhood Education: A 1-semester course; 3 credit hours. This course provides the student with

an understanding of the child's experience in the school as it relates to his/her total development. It raises particular problems associated with curriculum planning and helps to develop criteria for evaluating a program for younger children. 3 class hours per week.

CC2230 Early Childhood Education:

Theory and Practice: A 1-semester course; 4 credit hours. This course provides the student with an understanding of the child's experience in the school as it relates to his/her total development. It raises particular problems associated with curriculum planning and helps to develop criteria for evaluating a program for young children. The course will examine the historical development of early childhood education programs and services, the present prototypes and the universal elements contained in good programs. Defined areas of child behavior in varied educational settings will be observed and recorded. 3 class hours per week and 3 laboratory hours per week in varied educational settings.

CC2240 Expressive Learning Activities in Early Childhood Curriculum: A 1-semester course; 3 credit hours. This course explores the role of movement as a learning tool in the social, emotional and cognitive development of the young child. This course will help the student to understand and apply the theories of movement and to integrate the arts of music, poetry and dramatics into the early childhood curriculum. A variety of manipulative materials will be explored as emphasis will be placed on designing appropriate learning activities for the young child. This course will also introduce the student to the use of audio-visual media used in the early childhood classroom. 3 class hours per week.

CC2244 Enhancing Creativity in Early Childhood Curriculum: A 1-semester course; 3 credit hours. This course is designed to aid the teacher of young children in planning developmentally appropriate art activities in the early childhood curriculum. The course is structured so that students work individually in order to explore curriculum concepts and personal ideas through the use of art materials. Emphasis is placed on spontaneity, flexibility and invention in the ability to develop materials and activities appropriate to

the age, developmental level and special needs of the young child. 3 class hours per week.

CC2260 Math/Science for Early Childhood Curriculum: A 1-semester course; 3 credit hours. Students are introduced to the content and methods of teaching math and science in Early Childhood and are helped to develop skills in planning and presenting lessons in these areas and to develop appropriate methods for introducing these content areas into the curriculum. Emphasis will be given to concrete activities and materials which promote activities among children. 3 class hours per week.

CC2264 Seminar in Philosophy of Early Childhood Education: A 1-semester course; 3 credit hours. Students are given the opportunity to summarize and analyze their understanding of the theories and practices in early childhood education and the role of the professional in this field. An informal lecture/discussion format allows for analysis of practicum experience as well as for community resource guest lecturers and independent research. 3 class hours per week.

CC2311 Observation and Recording of Child Behavior: A 1-semester course; 1 credit hour. A preliminary study of child behavior in varied educational settings. Defined areas of child behavior will be observed and recorded. 3 practicum hours per week, plus 1 hour for recording and preparation. **Prerequisite:** CC2230 or CC2240.

CC2312 Early Childhood Education Practicum I: A 1-semester course; 3 credit hours. Under the guidance and supervision of the cooperating teacher, skills and concepts of child growth, development and learning acquired in Introduction to Early Childhood Education and in Introduction to the Creative Experience will be applied by the student in selected practicum placements. 1 class hour and 8 practicum hours per week. **Prerequisite:** CC2230 or CC2201, CC2240.

CC2353 Early Childhood Education Practicum II: A 1-semester course; 4 credit hours. The student will be actively involved in the varied activities which constitute the

curriculum of early childhood education classrooms and educational programs. Under the supervision of a cooperating teacher, the student will become more familiar with the role and responsibilities of the professional in early childhood education settings. 1 class hour and 12 practicum hours per week.

Prerequisite: CC2230 or CC2201, CC2312.

CC2354 Early Childhood Education Practicum III: A 1-semester course; 4 credit hours. 16 hours of experience in the early childhood classroom or educational program allows the student both greater involvement in the program and an increased familiarity with the role and responsibilities of the early childhood education professional. 16 practicum hours per week. **Prerequisite:** CC2312, CC2353.

Earth Science

ES5010 Earth Science: A 1-semester course; 3 credit hours. A survey of the earth sciences. This course will examine various earth systems and processes including the earth as a planet, the atmosphere and weather, the oceans, the solid earth and its minerals, and such processes as volcanism, weathering, glaciation, erosion and tectonics. This course should not be taken by students who have had Physical Geology or Meteorology, 3 class hours per week.

ES5501 Meteorology: A 1-semester course; 4 credit hours. A basic study of the elements which constitute weather: temperature, pressure, winds, humidity and precipitation. Further study includes weather data analysis and forecasting, and the relationships between weather and climate. 3 class hours and 2 lab hours per week.

ES5502 Physical Geology: A 1-semester course; 4 credit hours. Introduction to landforms and the processes of their formation: erosion by wind, water, ice, beaches and wave action. Further study is accomplished through the use of topographic maps. Additional topics include descriptions of basic rocks and minerals, volcanism, mountain building and crustal movement. 3 class hours and 2 lab hours per week.

Economics

EC3322 Micro-Economics: A 1-semester course; 3 credit hours. Introduction to micro-economics. This semester centers upon the functioning of individual markets and their effectiveness for resource allocation. Includes price and production theory, the distribution of income, and the theory of household behavior. 3 class hours per week.

EC3323 Macro-Economics: A 1-semester course; 3 credit hours. Introduction to macro-economic analysis and policy. An examination of the foundation and nature of economic principles as they apply to national output, money and banking, and monetary and fiscal policy. Course also focuses upon the problems of employment, inflation and economic growth as illuminated by modern national income analysis. 3 class hours per week.

Prerequisite: EC3322.

EC3652 Survey of Economics: A 1-semester course; 3 credit hours. A non-technical survey of current economic problems.

Background of economic concepts and terminology. Some focus on comparative economic systems. Not recommended for transfer students. 3 class hours per week.

Education

ED0402 Teaching Reading Readiness: A 1-semester course; 3 credit hours. An imaginative and creative approach to teaching readiness skills through literature for the pre-primary child. Behavioral characteristics of young children and their implications relating to books will be the focus of the course.

Picture books, storytelling, folk tales, fantasy, puppetry, dramakinetics, reading aloud, oral language development, along with guidelines for assisting the child in becoming more ready for beginning reading instruction, will be explored and demonstrated. This course is directed primarily for anyone who is or who seeks to work with the pre-school child. 3 class hours per week.

Electricity

EL6601 Electricity I: A 1-semester course; 6 credit hours. History of electricity; electron theory; conductors and insulators; batteries; Ohm's law; resistors; series, parallel and combinational DC circuits; basic math review; magnetism; reading and interpreting of blueprints; residential wiring; national and state electrical codes. 5-1/2 class hours per week. **Prerequisite:** Proficiency in basic arithmetic functions.

EL6602 Electricity II: A 1-semester course; 6 credit hours. Scientific notation; powers and roots; vectors; basic trigonometry; alternating current principles; AC circuit calculations; inductance and capacitance; reactance; series and parallel AC circuits; specifications and floor plans for commercial buildings; understanding construction details; drawing one-line diagrams of power systems; applying code regulations to commercial buildings; load calculations. 5- 1/2 class hours per week. **Prerequisite:** EL6601.

EL6603 Electricity III: A 1-semester course; 6 credit hours. The metric system; power factor and correction techniques; transformers; DC motors and generators; Wye and Delta transformers; single phase AC systems; polyphase systems; specifications and floor plans for industrial plants; feeder and subfeeder calculations; electrical code for transformers, services, motors, capacitors. 5-1/2 class hours per week. **Prerequisite:** EL6602. **Note:** May be used as a technical elective in the Electronic Technology Program.

EL6604 Electricity IV: A 1-semester course; 6 credit hours. Characteristics of three-phase alternators; AC motors and generators; basic motor controllers; introduction to solid state components; reading electronic diagrams; troubleshooting electro-mechanical and solid state motor control circuits; basic test instruments; drawing schematic control diagrams; electrical code review and practical applications; exam preparation. 5-1/2 class hours per week. **Prerequisite:** EL6603. **Note:** May be used as a technical elective in the Electronic Technology Program.

Electronics

ET6000 Mathematical Methods for Engineering and Computer Science: A 1-semester course; 1 credit hour. A course covering selected topics necessary for engineering and computer science. Topics include, but are not limited to, complex numbers, linear equations and their solution by determinants and matrices. 1 class hour per week. Not open to students who have taken MA5622.

ET6111 Introduction to Electric Circuits: A 1-semester course; 4 credit hours. DC circuits, including Ohm's Law, Kirchhoff's Laws, series circuits, parallel circuits, series-parallel combinations; capacitance, inductance, transients in RC and RL circuits; AC circuits, including sinusoids, phasors, use of complex numbers to solve RLC circuits, resonance and transformers; network analysis, including loop equations, nodal equations, Thevenin's and Norton equivalent circuits and superposition. Not applicable to a degree in Electronic Technology. 3 class hours and 1 3-hour lab per week. **Prerequisite:** MA5621 or MA5621 concurrently.

ET6112 Analog Electronics for Computers: A 1-semester course; 3 credit hours. Selected topics in analog electronics necessary for servicing digital computer systems. Topics include semiconductor diodes, power supplies including regulators, transistors and their applications as amplifiers, switches and drivers. 2 class hours and 3 lab hours per week. **Prerequisite:** ET6111 Introduction to Electric Circuits; MA5687 Contemporary Math for Electronics.

ET6113 Introduction to Electronics: A 1-semester course; 1 credit hour. A basic course introducing the student to electronics, the course covers elementary circuitry, the relationship of voltage and current, scientific notation, simple amplification, radio and television systems, explanation of the oscilloscope, resistor combinations and power, meters, inductors, capacitors, and semiconductors. 2 class hours per week. **Prerequisite:** MA0030 Basic Algebra or permission of instructor.

ET6600 Engineering Drafting: A 1-semester course; 3 credit hours. The application of the basic skills needed to make and read sketches and drawings. Students will use drafting instruments and will learn to perform the operations of the trade including the inspection of the completed work. The course will include lettering, sketching, and dimensioning with applications in sectioning and views of primary and secondary engineering drawings. 1 class hour and 4 lab hours per week.

ET6601 Engineering Design Graphics: A 1-semester course; 2 credit hours. This course stresses communication by graphical or pictorial means. Lettering, graphics sketching, orthographic projection, auxiliary views, dimensioning and descriptive geometry principles are topics covered. Neatness is emphasized throughout. 1 class hour and 2 lab hours per week.

ET6603 Digital Logic Laboratory: A 1-semester course; 1 credit hour. Proper interconnection of TTL integrated circuits. Experiments in digital logic circuits using gates, flipflops, counters, etc. 1 3-hour lab per week. **Prerequisite:** Fundamentals of Digital Logic to be taken concurrently or previously.

ET6611 Circuit Analysis I: A 1-semester course; 4 credit hours. Introduction to the analysis of electric circuits using DC sources. Applications of Kirchhoff's Voltage and Current Laws, superposition, loop analysis, nodal analysis and Thevenin's Theorem. 3 class hours and 3 lab hours per week. **Prerequisite:** MA5621 to be taken concurrently or previously.

ET6612 Circuit Analysis II: A 1-semester course; 4 credit hours. Extension of the theorems developed in ET6611 as they apply to circuits excited by sinusoidal sources. Energy considerations, storage of energy, RMS calculations, determinant solutions, resonance and transformers. 3 class hours and 3 lab hours per week. **Prerequisite:** ET6611 and MA5621.

ET6641 Robotics I: A 1-semester course; 3 credit hours. A course in robot fundamentals using the foundation of commercial kits. Includes AC and fluidic power, platform mobility, DC power and positioning,

manipulator areas of motion, on board logic probe, manual controls of a DC motor with interaction of microprocessor controller. 2 lecture hours and 3 lab hours per week.

Prerequisite: ET6690 Microcomputers (may be taken concurrently).

ET6642 Robotics II: A 1-semester course; 3 credit hours. A continuation of Robotics I including voice synthesis, interfacing and industrial robots language sensors and sound, and robots in work. 2 lecture hours and 3 lab hours per week. **Prerequisite:** ET6641 Robotics I.

ET6651 Engineering Mechanics I Statics: A 1-semester course; 3 credit hours. Development of fundamental concepts of mechanics such as vectors, forces and moments. Detailed treatment of free body diagrams and their application to force systems. Laws of static equilibrium, friction forces, first and second moments, and problems involving various structures and machine parts. Methods of solution will include vector analysis, matrix methods and computer-aided analysis. 3 class hours per week. **Prerequisite:** PI5623 and MA5692 or equivalent. MA5692 may be taken concurrently.

ET6652 Engineering Mechanics II – Dynamics: A 1-semester course; 3 credit hours. Basic laws of kinematics of particles and rigid bodies involving linear, angular, relative and absolute motion. Newton's Laws and their application to the kinematics of rigid bodies in translation, rotation and plane motion; and the principles of work, kinetic energy, impulse and momentum. Methods of solution will include vector analysis, matrix methods and computer-aided analysis. 3 class hours per week. **Prerequisite:** ET6651.

ET6661 Networks I: A 1-semester course; 5 credit hours. Introduction to general network solutions employing mathematical models and topology. the study of circuit analysis employing Kirchhoff's laws, Thevenin's Theorem, Norton's Theorem, superposition and maximum power theorems, is emphasized. 4 class hours and 4 lab hours per week. **Prerequisite:** MA5693 to be taken concurrently or previously.

ET6662 Networks II: A 1-semester course; 5 credit hours. Sinusoidal analysis of circuits employing phasor analysis. Sinusoidal steady state response found by nodal, mesh, superposition, source transformations. Thevenin's Theorem and phasor diagrams are explained. RMS values and average power and complex power is studied in detail. Major emphasis is placed on analysis using complex frequency (S-Plane). This would include frequency response of RL, RC, and RLC circuits (including resonance). The remainder of the course deals with two port network parameters and Fourier series analysis. 4 class hours and 3 lab hours per week. **Prerequisite:** ET6661, MA5685 concurrently.

ET6670 Electronics Circuits I: A 1-semester course; 4 credit hours. The fundamentals of AC circuits, including sinusoids, phasors, reactance, impedance, series and parallel circuits, and transformers. Also an introduction to semiconductor devices; diodes, transistors, and FET's. 3 class hours and 3 lab hours per week. **Prerequisite:** ET6111 Introduction to Electric Circuits.

ET6671 Electronics Circuits II: A 1-semester course; 3 credit hours. Applications of semiconductor devices such as diodes, transistors, FET's, and operational amplifiers. Emphasis will be placed on computer oriented applications. This course is not applicable toward a degree in Electronic Technology. 3 class hours per week. **Prerequisite:** ET6670 Electronic Circuits I

ET6672 Electronics I: A 1-semester course; 5 credit hours. A first course beginning with introductory semiconductor physics and semiconductor devices. Biasing and stability of devices and small signal models of same. Applications of semiconductors in rectifiers and amplifiers. Field effect transistors. 4 class hours and 1 3-hour lab per week. **Prerequisite:** ET6611, ET6612 concurrently, or ET6111.

ET6673 Electronics II: A 1-semester course; 5 credit hours. The analysis of the behavior of multistage amplifiers, power amplifiers, tuned circuit amplifiers, feedback amplifiers and oscillators. Integrated circuits, including differential and operational amplifiers and

voltage regulators. 4 class hours and 1 3-hour lab per week. **Prerequisite:** ET6672.

ET6682 Digital Electronics: A 1-semester course; 4 credit hours. A study of traditional logic design as well as newer techniques utilizing MSI and LSI. Both combinational logic and sequential logic are covered including registers and counters. Also included is an introduction to memory and programmed logic. 3 class hours and 1 3-hour lab per week. **Prerequisite:** ET6612 or ET6111, ET6672, CT6601.

ET6684 Communications Circuits: A 1-semester course; 4 credit hours. Types and characteristics of electronic systems. Introductory system analysis. Transducers and other system components. Integrated circuits including operational amplifiers, multipliers, D/A and A/D converters, phase locked loops. Applications of the above in communication and instrumentation systems. 3 class hours and 1 3-hour lab per week. **Prerequisite:** ET6612, ET6672.

ET6690 Microcomputers: A 1-semester course; 4 credit hours. Introduction to microprocessors including basics of the CPU, timing and addressing instruction sets, assembly language programming, memory, input/output techniques, interfacing. 3 class hours and 3 lab hours per week. **Prerequisite:** CT6601.

English

EN0101 Journalism I: A 1-semester course; 3 credit hours. The course provides background and training in journalistic writing with the emphasis on the techniques of newspaper reporting and publication. Attention is also given to preparation of scripts and tapes for broadcasting as well as writing the press release. 3 class hours per week.

EN0102 Journalism II: A 1-semester course; 3 credit hours. Advanced reporting and news production. Assignments relate to covering public affairs (including local government and community services) in the Merrimack Valley. The student will assist in the production of THE OBSERVER, the student

newspaper. Required: at least five well-developed articles published in area publications. 3 class hours per week. **Prerequisite:** EN0101 or permission of the instructor.

EN0103 Journalism Practicum: A 1-semester course; 3 credit hours. The course provides practical experience in professional journalism through internships at area newspapers, broadcasting stations or public relations departments of area institutions and agencies. A faculty member and representative of the employing agency coordinate and evaluate the student's work. 1 class hour and 6 practicum hours per week. **Prerequisite:** EN0102 and recommendation of faculty teaching courses in the Course Concentration in Journalism/Broadcasting.

EN0121 Creative Writing: A 1-semester course; 3 credit hours. The theory and practice of all kinds of creative writing: poetry, fiction, drama, nonfiction narrative. Emphasis on students' own writing, group discussion, and readings of professional writers appropriate to students' writing. 3 class hours per week.

EN0211 ELC Core English I: A 1-semester course; 8 credit hours. English Language Center introduction to American English for non-English-speakers. Develops base for further language training, including the ability to handle simple questions and answers within a limited range of basic topics. 12 contact hours per week. **Prerequisite:** ELC Oral Test.

EN0212 ELC Core English II: A 1-semester course; 8 credit hours. English Language Center second level structure course for non-native speakers of English. Includes mastery and integration of introductory grammar sequence and basic vocabulary. 12 contact hours per week. **Prerequisite:** ELC Grammar/Writing Test.

EN0213 ELC Core English III: A 1-semester course; 8 credit hours. English Language Center third level structure course for non-native speakers of English. Includes review and integration of major English tenses and development of core vocabulary. 12 contact hours per week. **Prerequisite:** ELC Grammar/Writing Test.

EN0214 ELC Core English IV: A 1-semester course; 8 credit hours. English Language Center fourth level structure course for non-native speakers of English. Includes introduction to clause-structure grammar and practice integrating core vocabulary into complex sentences. 12 contact hours per week. **Prerequisite:** ELC Grammar/Writing Test.

EN0215 ELC Academic English I: A 1-semester course; 4 credit hours. Development of academic vocabulary and usage for college writing and speaking. For non-native speakers of English. Includes analysis of syntax and vocabulary in context, and techniques for writing about readings. 6 contact hours per week. **Prerequisite:** ELC Grammar/Writing and Oral Tests.

EN0216 ELC Academic English II: A 1-semester course; 4 credit hours. Integration of academic vocabulary and usage in college reading, writing, and speaking. Includes analysis of and writing about readings and study of derived word forms. 6 contact hours per week. **Prerequisite:** Grammar/Writing Tests.

EN0221 ELC Reading I: A 1-semester course; 4 credit hours. English Language Center reading in English for beginners who are non-native speakers of English. Includes introduction to English graphemes and basic English phonics, and builds a reading vocabulary of 500 to 800 basic English words. 6 contact hours per week. **Prerequisite:** ELC Reading Test.

EN0222 ELC Reading II: A 1-semester course; 4 credit hours. English Language Center second level reading course for non-native speakers of English. Includes comprehension of vocabulary in context, English phonics, dictionary skills, inflected forms, and individualized reading practice. 6 contact hours per week. **Prerequisite:** ELC Reading Test.

EN0223 ELC Reading III: A 1-semester course; 4 credit hours. English Language Center third level reading course for non-native speakers of English. Includes study of prefixes and suffixes, dictionary skills, comprehension of vocabulary in context, and

development of reading fluency through individualized reading assignments. 6 contact hours per week. **Prerequisite:** ELC Reading Test.

EN0224 ELC Reading IV: A 1-semester course; 4 credit hours. English Language Center fourth level reading course for non-native speakers of English. Includes study of word formation, dictionary skills, development of academic study skills, comprehension of general vocabulary in context, and development of reading fluency through individualized assignment. 6 contact hours per week. **Prerequisite:** ELC Reading Test.

EN0225 ELC Academic Reading: A 1-semester course; 4 credit hours. English Language Center highest level reading course for non-native speakers of English. Includes academic vocabulary in context, word analysis, dictionary skills, and development of reading fluency through individualized reading assignments. 6 contact hours per week. **Prerequisite:** ELC Reading Test.

EN0231 ELC Communication I: A 1-semester course; 4 credit hours. English Language Center phonology course for beginners who are non-English-speakers. Develops fundamental listening and pronunciation skills. 6 contact hours per week. **Prerequisite:** ELC Oral Test.

EN0232 ELC Communication II: A 1-semester course; 4 credit hours. English Language Center second level communication course for non-native speakers of English. Develops basic communication skills in speaking and writing. 6 contact hours per week. **Prerequisite:** ELC Oral Test and Writing Sample.

EN0233 ELC Communication III: A 1-semester course; 4 credit hours. English Language Center third level communication course for non-native speakers of English. Develops general conversation and writing skills using topical vocabulary. Writing skills include outlining and composition organization. 6 contact hours per week. **Prerequisite:** ELC Oral Test and Writing Sample.

EN0234 ELC Communication IV: A 1-semester course; 4 credit hours. English Language Center fourth level communication

course for non-native speakers of English. Develops academic listening, speaking, and writing skills using general academic vocabulary and situations. 6 contact hours per week. **Prerequisite:** ELC Oral Test and Writing Sample.

EN0251 ELC Core English IA: A 1-semester course; 4 credit hours. Includes first half of English Language Center introduction to American English for non-English-speakers. Develops base for further language training, including the ability to handle simple questions and answers within a limited range of basic topics. 6 contact hours per week. **Prerequisite:** ELC Oral Test.

EN0252 ELC Core English IB: A 1-semester course; 4 credit hours. Includes second half of English Language Center introduction to American English for non-English-speakers. Develops base for further language training, including the ability to handle simple questions and answers within a limited range of basic topics. 6 contact hours per week. **Prerequisite:** ELC Oral Test.

EN0253 ELC Core English IIA: A 1-semester course; 4 credit hours. First half of English Language Center second level structure course for non-native speakers of English. Includes mastery of integration of introductory grammar sequence and basic vocabulary. 6 contact hours per week. **Prerequisite:** ELC Grammar/Writing Test.

EN0254 ELC Core English IIB: A 1-semester course; 4 credit hours. Second half of English Language Center second level structure course for non-native speakers of English. Includes mastery and integration of introductory grammar sequence and basic vocabulary. 6 contact hours per week. **Prerequisite:** ELC Grammar/Writing Test.

EN0255 ELC Core English IIIA: A 1-semester course; 4 credit hours. First half of English Language Center third level structure course for non-native speakers of English. Includes review and integration of major English tenses and development of core vocabulary. 6 contact hours per week. **Prerequisite:** ELC Grammar/Writing Test.

EN0256 ELC Core English IIIB: A 1-semester course; 4 credit hours. Second half

of English Language Center third level structure course for non-native speakers of English. Includes review and integration of major English tenses and development of core vocabulary. 6 contact hours per week.

Prerequisite: ELC Grammar/Writing Test.

EN0257 ELC Core English IVA: A 1-semester course; 4 credit hours. First half of English Language Center fourth level structure course for non-native speakers of English. Includes introduction to clause-structure grammar and practice integrating core vocabulary into complex sentences. 6 contact hours per week. **Prerequisite:** ELC Grammar/Writing Test.

EN0258 ELC Core English IVB: A 1-semester course; 4 credit hours. Second half of English Language Center fourth level structure course for non-native speakers of English. Includes introduction to clause-structure grammar and practice integrating core vocabulary into complex sentences. 6 contact hours per week. **Prerequisite:** ELC Grammar/Writing Test.

EN0400 Basic Reading: A 1-semester course; 3 credit hours. A course designed to help students improve their basic reading skills. Through group and individualized instruction, the course helps the student develop the skills, habits and attitudes that will result in more effective reading. Topics include word analysis, vocabulary development, comprehension techniques, and study skills. Instructional materials are at an appropriate level. Much attention is given to the development of individualized skills in the Reading Lab, and for this reason pre- and post-diagnostic tests are given. 2 class hours and 2 lab hours per week.

EN0401 College Reading: A 1-semester course; 3 credit hours. This course is designed to meet a variety of more advanced reading and study skill needs, primarily the need to read college level materials more effectively. Students learn to recognize main ideas, to read an article or chapter and remember its key points, to take inclusive, meaningful notes, to read actively and critically, to explore memory techniques, and to respond to our language with greater

vocabulary depth. 3 class hours and 1 lab hour per week.

EN2450 Speed Reading: A 1-semester course; 1 credit hour. This course is intended for students who have successfully completed College Reading or who have demonstrated, through assessment testing, a reading vocabulary level at or above their current grade. The basic objective of the course is to enable students to develop more flexible and more efficient reading habits. Topics include phrase reading, previewing, skimming and scanning techniques. Students will practice with the assigned material and their own literature. Evaluation will be based on standardized and informal testing. 1 class hour per week. **Prerequisite:** College Reading or permission of instructor.

EN3333 Broadcast Reporting and Announcing: A 1-semester course; 3 credit hours. The student will learn through the study of current radio and television practices how to edit and write news items for the radio and TV news media; how to broadcast these items on radio and TV; how to use basic equipment associated with radio and TV news gathering and production; and how to evaluate current broadcasting practices. Students are encouraged, though not required, to have access to a portable tape recorder and stop watch. 3 class hours per week.

EN3334 Television Production I: A 1-semester course; 3 credit hours. The student will learn through the study of current television practices: how to write for, edit, produce and direct various complete television programs in a non-dramatic format; how to operate the equipment in the TV studio and control centers; and how to evaluate television content. While the emphasis will be on the TV news program in which the student will learn how to work as an assignment editor and anchor person, the student will also learn the basic techniques of the extended interview, the panel show and the documentary. 2 lecture hours and 2 lab hours per week. Limited to 18 students. **Prerequisite:** EN3333 and permission of the instructor.

EN3335 Television Production II: A 1-semester course; 3 credit hours. The course

builds upon the basic skills learned in Television I by utilizing the crew system in the television studio and control room. Students are required to produce (plan, write, stage, and direct) one television program on a topic of their choice to demonstrate these competencies: the ability to write a standard television script; the ability to use the specialized language of television; the ability to select and adapt audio and visual materials appropriate to the subject of the program. Students will be required to assist in the television production of at least two projects related to the college's performing arts (mime, dance, drama, music). 2 lecture hours and 2 lab hours per week. Limited to 18 students. **Prerequisite:** Successful completion of Television Production I.

EN4400 Basic Writing: A 1-semester course; 3 credit hours. Designed for students who lack the writing skills necessary to succeed in English Composition I. Emphasizes the composition of sentences, paragraphs and short essays. Attention is also given to punctuation, grammar and spelling on an individualized basis. This course does not satisfy any part of the English Composition requirement for graduation. Enrollment is dependent upon referral by the Composition I faculty on the basis of a writing sample, faculty advisor's or counselor's referral, or permission of the instructor. Students for whom English is a second language are strongly urged to have completed ELC Core English IV or have equivalent knowledge. The instructor may require 1 lab hour per week in addition to the class hours. 3 class hours per week.

EN4401 English Composition I: A 1-semester course; 3 credit hours. A required course to develop clear, effective writing, including the special techniques in communication and the development of ideas that enable students to organize their thoughts and interest others in what they say. Students will be required to demonstrate their writing competency based upon written minimum standards established by the department. 3 class hours per week. **Prerequisite:** Students entering English Composition I will be required to complete a writing sample.

Students whose writing sample gives evidence of deficiency, based upon the department's criteria, will be required to postpone taking English Composition I until they have successfully completed a preparatory writing or reading course or done other independent work supervised by a staff member.

EN4402 English Composition II: A 1-semester course; 3 credit hours. A required course which is a continuation of English Composition I with emphasis on longer analytic and argumentative papers and style. Readings and materials, which will vary from section to section, will be employed as the basis for a range of essays such as reports, evaluations, literary criticism, reviews, film criticism, and research papers. 3 class hours per week. **Prerequisite:** completion of EN4401 with a grade of C- or better.

EN4676 Technical Writing: A 1-semester course; 3 credit hours. This course provides exposure to and practice in various types of technical writing. It is appropriate for those considering technical communication as a career or those in technical fields who wish to communicate more effectively. Adapting style to audience and use of visual aids will be emphasized throughout. There will be practice in preparing technical definitions, descriptions, user instructions, proposals, written and oral reports. Whenever possible students will be expected to integrate their technical knowledge with writing projects in this course. 3 class hours per week. **Prerequisite:** EN4401 and EN4402.

EN4678 Spelling Laboratory: A 1-semester course; 1 credit hour. Individualized help for the poor speller. Students enrolling in this course will be given a diagnostic test to locate particular spelling problems: an individualized program involving intensive practice with spelling tapes and workbooks will be set up. The credit earned in this course does not satisfy any part of the composition requirement for graduation. 2 lab hours per week held in the Writing Center and/or the Audio Laboratory. **Prerequisite:** Permission of the instructor.

EN5500 Introduction to Language: A 1-semester course; 3 credit hours. A general

overview of the study of language to include: the origin and development of language; the universal properties of language; language acquisition; dialects; meaning changes; and semantics. Various languages, American Sign Language, and history of the English language will be discussed. 3 class hours per week.

EN8011 Speech: A 1-semester course; 3 credit hours. Instruction and practice in skills essential to effective oral communication. The course includes organization, presentation, and relationship between speaker and audience. 3 class hours per week.

EN8020 Interpersonal Communication: A 1-semester course; 3 credit hours. A course designed to help students understand the theory and develop the skills necessary for effective communication. The course explores communication axioms, verbal and nonverbal messages, message reception and sending, interpersonal listening and feedback, E-prime language, nondirective responding, paraphrasing, describing feelings, behaving assertively, managing conflict, and facilitating consensus in small groups. 3 class hours per week.

EN8401 Children's Literature: A 1-semester course; 3 credit hours. An introductory course in children's books. Considers the history of children's literature and contemporary authors. Study of criteria of good literature, children's interests and developmental stages related to books, various genre of children's literature, children's book awards, illustrators and authors, and reference sources. 3 class hours per week.

EN8801 The Bible As Literature: A 1-semester course; 3 credit hours. Designed to capture the literary content, qualities, and techniques of the Hebrew and Greek scriptures in translation, with particular emphasis on the Old Testament. Genres to be analyzed include the heroic narrative, epic, tragedy, lyric poetry, encomium and others. 3 class hours per week.

EN8851 American Literature I: A 1-semester course; 3 credit hours. A survey of such significant authors of the 17th, 18th, and 19th centuries as Bradstreet, Franklin, Irving, Hawthorne, Emerson, Thoreau, Melville, Whitman, Dickinson, Twain, Crane and

James. 3 class hours per week.

EN8852 American Literature II: A 1-semester course; 3 credit hours. James, Hemingway, Fitzgerald, and Faulkner indicate the range of our prose. Porter, O'Connor, Ellison and Baldwin, the fact that it extends to women and blacks. Our century is rich in poetry as well thanks to Robinson, Frost, Williams, Pound and Ginsberg. A survey of twentieth-century literature, with varying selections among these authors and others. 3 class hours per week.

EN8853/EN8854 British Literature I and II: A 2-semester course; 3 credit hours per semester. A study of the major works of selected English poets, dramatists and prose writers, with their historical and literary background, directed through lectures and reading, with special exercises in interpretation and criticism. 3 class hours per week.

EN8856/EN8857 Literature: Major Writers I and II: Two 1-semester courses; 3 credit hours per semester. An examination of the principal works of one or two major writers of Classical, European, English, American, Latin American, Asian, or African literature. The author or authors examined will differ each semester. 3 class hours per week.

EN8861 Western Literature Before 1600: A 1-semester course; 3 credit hours. Among the authors will be a preponderance of Greeks - Homer, Aeschylus, Sophocles, Euripides, Aristophanes and Plato because of the richness of ancient and classical literature in Greece. Romans such as Ovid and Virgil and anonymous medieval authors will also be read, for the pleasures they afford and the signs they give of how and why cultural artifacts are transmitted. 3 class hours per week.

EN8862 Western Literature Since 1600: A 1-semester course; 3 credit hours. Great books from the last thousand years, written in languages other than English and wonderfully readable in translation. Dante, Machiavelli, Moliere, Voltaire, Ibsen, Gogol, Dostoevsky, Chekhov, Kafka and Malraux suggest the variation in selection that will occur from year to year. 3 class hours per week.

EN8864 Literature: Shakespeare: A 1-semester course; 3 credit hours. Shakespeare provides a more comprehensive sense of human nature and potential than any of our other writers. Selected plays will be analyzed to understand first, each play's internal workings; and second, Shakespeare's rapidly evolving moral and artistic concerns. This course cultivates students' abilities to read the plays comfortably, to follow and enjoy a performance, and to write about the plays with understanding. 3 class hours per week.

EN8867 Mythology and Literature: A 1-semester course; 3 credit hours. The study of the stories a society cannot forget. Using texts ranging from the Bible and Homer's epics to contemporary literary works, the course introduces mythological approaches to such subjects as heroism, place, time, family and human nature and discusses the relationship between mythology and other more limited human studies, including religion, psychology, history and sociology. 3 class hours per week.

EN8881 Literature: The American Novel: A 1-semester course; 3 credit hours. Reading and discussion of significant novels of the nineteenth and twentieth centuries. Included among the authors considered are: Twain, Melville, Hawthorne, Crane, Dreiser, Henry James, Fitzgerald, Steinbeck, Anderson, Hemingway, Salinger, Faulkner, Flannery O'Connor, Cooper, Howell, Wharton, Cather. Analysis of form and philosophy. 3 class hours a week.

EN8882 Literature: Women's Lives Recorded and Imagined: A 1-semester course; 3 credit hours. A study of women's lives, primarily in women's words, through biography, autobiography, journals, letters and fiction. Includes, as written materials permit, women from all walks of life: famous, infamous and previously unknown, exploring both historic and imaginative limits set on women's selfhood. Students will develop critical perspectives on uses of literary sources and will apply what they learn to contemporary women's lives. 3 class hours per week.

EN8883 Women in Literature and Life: A 1-semester course; 3 credit hours. A study of

literary and historical accounts of women in courtly society - late Middle Ages through early Renaissance - and in democratic society - 1890 to 1970 - for the purpose of tracing the cultural influence of an idea, the idea of courtly love, on literature and life. 3 class hours per week.

EN8884 Literature: Twentieth Century Women in Film: A 1-semester course; 3 credit hours. Offers the student an examination of the multiple views of woman as seen through the cinema. Looking at examples from literature and film, the student will be exposed to the varied attitudes toward self, beauty, socialization, exploitation and destiny of the twentieth-century woman. It is suggested that the student take EN8883 Women in Literature and Life prior to this course, but it is not mandatory. 2 class hours and 2 lab hours per week.

EN8885 Literature: The Art of the Movies: A 1-semester course; 3 credit hours. This course will attempt to foster critical taste in film. Students will explore the role of film in contemporary society by viewing and discussing documentaries, experimental films, impressionistic films, animated films and commercial films. Discussion and analysis will acquaint the student with the interrelationship of film technique and content. 2 class and 2 lab hours per week.

EN8891 Literature: Introduction to Poetry: A 1-semester course; 3 credit hours. Designed to acquaint the student with the various forms and scope of poetry. This course is to be an overview of the concept of poetry. 3 class hours per week.

EN8894 Literature: The Short Story: A 1-semester course; 3 credit hours. Stresses close critical reading and discussion of selected short stories written by nineteenth and twentieth century authors from around the world, with special emphasis on works by American writers. 3 class hours per week.

Environmental Technology

EV5000 Industrial Environment Control I: Designed as the first of two offerings on industrial environment control, this course has

been developed for the student who seeks entry-level placement or employment upgrade in the field of industrial wastewater technology. Emphasis will be placed on treatment of industrial waste from electroplating, metal finishing and printed circuit board manufacturing facilities. Topics covered include the study of sources of wastewater. Methods of treatment and unit operations such as collection, neutralization, flocculation and discharge. Throughout the course of study, safety measures, regulations and poVicies will be discussed.

EN5010 Industrial Environment Control II: This course is the second of a two-part offering developed for industrial environment control technology. Topics include: equipment/instrumentation operations and maintenance, chemical feed systems, chlorination, activated carbon and oxidation reduction reactions and controls. **Prerequisite:** Industrial Environment Control I.

EV5625 Water & Wastewater Treatment I: A 1-semester course; 4 credit hours. Theory and laboratory technique for all control tests of water purification including bacteriology, color, turbidity, pH, alkalinity, hardness, coagulation, chlorides, florides, iron, manganese, detergents, bactericides and nitrates. 3 class hours and 3 lab hours per week.

EV5626 Water & Wastewater Treatment II: A 1-semester course; 4 credit hours. Theory and laboratory technique for the determination of solids. Dissolved oxygen, oxygen consumed, relative stability, water and sewage bacteria, biochemical oxygen demand, organic nitrogen, volatile acids, toxic metals, stream studies, in-plant studies at nearby plants. 3 class hours and 3 lab hours per week.

Finance

FI3600 Computerized Business

Applications: A 1-semester course; 3 credit hours. Students will be given a series of problems taken from marketing, finance, accounting and production. They will be asked to explore solutions to these problems, using predesigned and pretested templates

which operate in conjunction with Lotus 1-2-3. 2 class hours and 2 lab hours per week.

FI3652 Business Finance: A 1-semester course; 3 credit hours. Principles and practices of business finance. The short and long term sources of funds, management of financial assets, capital requirements, alternative forms of financing and the capital market. Some use of case study method. 3 class hours per week. **Prerequisite:** AC6602

FI6651 Principles of Insurance: A 1-semester course; 3 credit hours. Study of the principles of risk management and how insurance handles risk. The concept of risk management is outlined. Insurance coverages for the following are studied: property, liability, life and health. 3 class hours per week.

FI6663 Principles of Real Estate: A 1-semester course; 3 credit hours. Survey of the various areas of real estate practice and the principles involved in the purchase, valuation and selling of real estate. 3 class hours per week.

FI6670 Real Estate Valuation: A 1-semester course; 3 credit hours. This course is specifically designed to serve as an introduction to real estate appraising. It will introduce the student to the basic framework of analysis available to appraise interests in real estate and explain the principles upon which they are based. The course deals with the three traditional appraisal methods used in the valuation process; i.e., the market data, cost and income methods. 3 class hours per week. **Prerequisite:** FI6663 Principles of Real Estate.

Fine Arts

FA7012 Introduction to the Creative Experience: A 1-semester course; 3 credit hours. This course is designed to introduce methods, materials and meaning of the arts to those who are involved in developmental programs - childhood to adulthood. It is the way to explore the world through nonverbal experiences which are personal to each one. Emphasis is placed on spontaneity, imagination, invention and flexibility of each student.

3 class hours per week.

FA7020 Introduction to the Creative Arts: A 1-semester course; 3 credit hours. An interdisciplinary approach to the arts with emphasis on both the experience of the arts and theory. The course is designed to give students an overview of all the arts by emphasizing the actual experience of dance, theatre, art and music. It is intended to give the student a strong sense of the enjoyment, excitement and pleasure that the arts can provide. 3 class hours per week.

FA7030 Drawing I: A 1-semester course; 3 credit hours. This course is an introduction to the problems, techniques, and materials of drawing. Each class project will focus on a different aspect of visual perception, visual composition, and artists' materials. 4 class hours per week.

FA7031 Drawing II: A 1-semester course; 3 credit hours. This course is a continuation of the problems, techniques and materials introduced in Drawing I. Students will continue exploring a variety of drawing materials. Emphasis, however, will be placed on understanding the problems inherent in translating what one sees in three dimensions to what one creates on the two dimensional surface. 4 class hours per week. **Prerequisite:** Drawing I.

FA7040 Painting I: A 1-semester course; 3 credit hours. This course is an introduction to the problems, techniques and materials of Painting. Each class project will focus on a different aspect of visual perception, visual composition and artists materials. 4 class hours per week.

FA7041 Painting II: A 1-semester course; 3 credit hours. This course is a continuation of Painting I. The emphasis will be on giving more complexity and subtlety to both the color and the composition in each project. The student will be encouraged to find personal solutions to the general problems presented. 4 class hours per week. **Prerequisite:** Painting I.

FA7045 Figure Drawing: A 1-semester course; 3 credit hours. This course offers the student the opportunity to draw from a live model. Class sessions will explore different

approaches to figure drawing, covering a variety of techniques and concepts (gesture drawing, contour line drawing, form, light and shade, movement, etc.). Students will be encouraged to experiment with a variety of materials, and to enlarge the scale of their work as the semester progresses. 4 class hours per week; 2 lecture hours and 2 lab hours per week.

FA7051 Introductory Photography: A 1-semester course; 3 credit hours. This course combines basic theory and practice. It covers camera controls, exposure, flash and artificial light, composition, and black and white darkroom techniques. Much of the material on the camera and aesthetics also applies to color photography. Students will need an adjustable 35mm camera. 2 class hours and 2 lab hours per week.

FA7052 Intermediate Photography: A 1-semester course; 3 credit hours. Advanced techniques and projects in both black and white, and color photography. Emphasis is on photographic self-expression and communications including publishing, exhibiting and commercial use of photographs. Topics include advanced printing controls, studio techniques, photojournalism, color printing, high contrast techniques and portraiture. Students may pursue one individual study topic. 2 class hours and 2 lab hours per week. **Prerequisite:** Introductory Photography or permission of the instructor.

FA7055 News Photography: A 1-semester course; 1 credit hour. A course on the practical application of photojournalism. Concentration is on providing eye catching photographs for newspapers, magazines, newsletters and other print media. Participants will regularly take and print pictures on assignment for the campus newspaper The Observer. Students will meet with instructor once a week to receive photo assignments and critique previous assignments. 1 class hour per week. **Prerequisite:** Introduction to Photography (may be taken concurrently) or permission of the instructor.

FA7060 Phototypesetting I: A 1-semester course; 3 credit hours. Exploration of current methods of typesetting technology on best

available phototypesetting equipment. All aspects of design composition are covered, including mark-up, input, correction and output. This course covers the design, composition and camera-ready production of printed materials. 2 class hours and 2 lab hours per week.

FA7080 Color and Design: A 1-semester course; 3 credit hours. This foundation course will look at color through its physical properties as well as its expressive functions. The class will explore the properties of value, hue and intensity. The student will deal with problems in manipulating color as well as mixing it. Concern will be for the process of taking a color concept from ideas to finished forms. There will be emphasis on clarity of concept through quality of craftsmanship. 2 class hours and 2 lab hours per week.

FA7089 Dance Pedagogy: A 1-semester course; 3 credit hours. This is a course for prospective teachers of dance or for those preparing for a second career. Topics of study will include dance theory, prevention of dance injuries, and teaching methods for a wide variety of levels. An additional minimum of 12 hours of teaching on or off campus, will be required. 3 class hours per week.

Prerequisite: Dance in Performance and permission of the instructor.

FA7090 Dance Repertory: A 1-semester course; 3 credit hours. A rehearsal format along with work on technique, this course will encompass traditional, modern, jazz and ballet repertoire and require participation in two performances. 4 class hours per week.

Prerequisite: Dance in Performance and permission of the instructor.

FA7091 Dance in Performance: A 1-semester course; 3 credit hours. The course will include a review of the basic techniques of Modern Dance, advance to more involved training in technique, movement and improvisation, and focus on the principle of dance production. Students will be introduced to production areas such as choreography, programming, costuming, lighting, public relations, audiovisual, special effects and budget, and they will participate in the final performance of the semester. Still Point, given

for the community. 3 class hours per week.

FA7094 Dance Composition: A 1-semester course; 3 credit hours. The course is designed to provide students with a broad perspective on movement, choreography and composition, through the study of dance history and various choreographic techniques. Students will have the opportunity to create and perform their individual works in a student performance to be given at the end of the semester. 3 class hours per week.

FA7096 Introduction to Graphic Design: A 1-semester course; 3 credit hours. An introductory course to develop basic skills in design, color and concepts of visual communication from rough idea to final presentation for commercial reproduction. Consideration will be given to the tools and media used in advertising design, layout and pasteup, and specific problems in graphic design including lettering and typography. 2 class hours and 2 lab hours per week.

FA7097 Intermediate Graphic Design: A 1-semester course; 3 credit hours. The course will focus on basic graphic design skills applied to commercial reproduction, with attention to the function of advertising in our society. Effective use of image, lettering and color in layout and design will be a primary consideration. Specific areas covered include logo and corporate identity, graphic illustration of book jackets and record covers, product labeling, brochures, and others. 2 class hours and 2 lab hours per week.

FA7099 Advanced Graphic Design: Desk Top Publishing: A 1-semester course; 3 credit hours. A continuation of the Introductory and Intermediate Graphic Design courses. Emphasis will be on introducing students to the field of desk-top publishing. Students will be expected to learn how to specify type for ad layouts, books, book covers and similar projects. Computer graphics will be an integral part of this semester's work with specific projects to be done on the Macintosh computer. Output from the Laserwriter will be used in some projects for the final camera-ready art work. An emphasis will be placed on real-world applications. 2 lecture hours and 2 lab hours per week.

FA9001 Illustration I: A 1-semester course; 3 credit hours. The aim of the course is to give exposure to a variety of media used in commercial illustration, as well as to the different types of illustration including book, newspaper and current event. Developing drawing skills will be an integral part of the course. The history of illustration will be presented in order to understand it as communication from concept to finished product. 2 class hours and 2 lab hours per week.

FA9002 Illustration II: A 1-semester course; 3 credit hours. Illustration II will give students an opportunity to build on the conceptual and technical strategies of pictorial communication introduced in Illustration I. It will offer possibilities for refining graphic and aesthetic abilities, developing personal style, and applying those skills toward assignments with actual or simulated commercial applications. Students will be encouraged to start a professional portfolio and will be offered exposure to the business, as well as the art, of illustration. 4 contact hours: 2 lecture hours and 2 lab hours per week. **Prerequisite:** Illustration I.

French

FR4401/FR4402 Introductory French I & II: A 2-semester course; 3 credit hours per semester. For students who have not completed two years of secondary school French or the equivalent as determined by the department. An introduction to the basic grammatical patterns of French. Speaking, reading and writing in the French language. 3 class hours per week.

FR4451/FR4452 Intermediate French I & II: A 2-semester course; 3 credit hours per semester. For students who have completed two or more years of secondary school French or the equivalent as determined by the department, or who completed FR4401 and FR4402 successfully. A continued study of FR4401 and FR4402 language skills, emphasizing the development of reading ability. 3 class hours per week.

Geography

GE9511 Introduction to Geography: A 1-semester course; 3 credit hours. A survey of the earth's political, social, cultural, and economic patterns and their relationship to the earth's physical features. The course will stress the location of nations and cities, rivers and seas, and it will examine the history and current political situation of each major area of the world. It will also discuss the exploitation of earth's resources with a view toward maintenance and restoration. 3 class hours per week.

GE9512 World Regional Geography: A 1-semester course; 3 credit hours. An area-by-area study of the different regions of the world. Each will be examined as to its history, its location, its physical and cultural attributes, and its relation to the part of the world. 3 class hours per week.

German

GM4401/GM4402 Introductory German I and II: A 2-semester course; 3 credit hours per semester. An adventure in German culture and communication. For students who have not completed two years of secondary school German or the equivalent as determined by the department. Audio-lingual emphasis. Introduction to grammatical patterns, speaking, reading and writing. 3 class hours per week.

GM4451/GM4452 Intermediate German I and II: A 2-semester course; 3 credit hours per semester. A further exploration of German life and language. For students who have completed two or more years of secondary school German or the equivalent as determined by the department, or who have completed GM4401 and GM4402. A workshop approach to the development of reading, speaking, translation and composition skills. 3 class hours per week.

Gerontology

GR6556 Law, Advocacy and Aging: A 1-semester course; 3 credit hours. A survey of the structure, functions and development of the

special needs, including the elderly. The course integrates training in specific legal procedures with an understanding of the legal system and the roles one can play in it. A workshop format will give students opportunities to explore areas of special interest. Included are introduction to the concept of advocacy, techniques and methods of advocacy and self-help, providing advocate services, nursing homes and legal systems that affect property rights and civil rights. 3 class hours per week.

GR6561 Gerontology Practicum I: A 1-semester course; 4 credit hours. The practicum is intended to provide the student with an opportunity to meet impaired elders and to put into practice theory learned in the classroom. Placement will be in an institutional setting, preferably a long-term care facility. The student will develop an understanding of the nursing home experience from the point of view of the resident or patient, the family and the facility staff. The class will meet weekly in a seminar format to discuss and work through problems and experiences encountered in the agency setting. 2 class hours and 8 practicum hours per week.

GR6562 Gerontology Practicum II: A 1-semester course; 4 credit hours. This course is intended to provide the student with an opportunity to meet elders living in the community and to become more aware of the various programs available to them. Placement will be in a Council on Aging or similar agency under the direct supervision of a representative of the agency. The class will meet weekly in a seminar format to discuss problems and experiences encountered in the agency setting. 2 class hours and 8 practicum hours per week.

Government

Note: Credit toward graduation will not be awarded for more than two of the following: Federal Government, State and Local Government, American Government and Politics.

GV3300 Introduction to Law: A 1-semester course; 3 credit hours. A survey of the structure, functions and development of the

legal and judicial process with emphasis on legal concepts, terminology and case analysis. Attention will be given to historical background for Anglo/American practices. 3 class hours per week.

GV3301 U. S. Constitutional Law: A 1-semester course; 3 credit hours. Constitutional law is a formal body of rules which consist primarily of decisions and opinions of the U. S. Supreme Court. It is the study of factual background, both historical and contemporary, of major Supreme Court cases to gain an analytical framework by which to understand the standards and tests applied by the Court in reaching decisions. Emphasis is on U. S. Governmental structure and relationships, including relationships with state and local governments. 3 class hours per week.

Prerequisite: GV3300 Introduction to Law or GV3312 Introduction to Political Science or GV3313 Federal Government or GV3314 State and Local Government.

GV3310 American Government and Politics: A 1-semester course; 3 credit hours. A survey of the structure and operations of the Federal government as well as state government. The course will include the relationship of the three branches of the federal government to each other and to the state governments. U.S. and state constitutions and their interpretations will be discussed. Emphasis is given to American political traditions, parties, processes, and a range of governmental policies. **Note:** This course is designed to meet the requirements of state law for students who intend to transfer to Massachusetts state colleges. 3 class hours per week.

GV3312 Introduction to Political Science: A 1-semester course; 3 credit hours. A descriptive survey of the general principles of politics. Emphasis is given to the development of politics in society, the major political traditions and ideologies, and comparative governmental systems including institutions, political organization and behavior, and a select range of government policies. 3 class hours per week.

GV3313 The Federal Government: A 1-semester course; 3 credit hours. The structure, functions, and procedures of the legislative,

judicial, and administrative branches of the Federal Government will be analyzed within the context of the Constitution of the United States. Emphasis will be given to the structure and function of the various branches of government as well as their interrelationships and the effect of other factors on their functions. 3 class hours per week.

GV3314 State and Local Government: A 1-semester course; 3 credit hours. The structure, functions, politics, and problems of state and local government will be dealt with in an attempt to become aware of the functions and operations of state and local government. Special emphasis will be given to the identification and definition of problem areas in an attempt to better understand the issues involved as well as to deal with possible solutions. 3 class hours per week.

GV3315 Civil Rights and Liberties: A 1-semester course; 3 credit hours. Course deals with the role of individual rights and liberties in American society within the framework of the United States Constitution. The paradox of freedom is essentially the core around which lectures, discussion and research will be conducted. It is advisable to take this course after having completed a course in federal government. 3 class hours per week.

Prerequisite: GV3301 U. S. Constitution Law or GV3300 Introduction to Law or GV3312 Introduction to Political Science or GV3313 Federal Government or GV3314 State and Local Government or permission of the instructor.

GV3320 Women and the Law: A 1-semester course; 3 credit hours. This course is designed to introduce students to various areas of law that affect a woman's life. It will include such topics as an historical overview of women's legal rights in the United States, employment rights and benefits, education, criminal law, marriage and divorce and reproductive issues as well as other constitutional issues specifically pertinent to women. Students will each explore one area in depth. This is an introductory course that does not presuppose prior study of law. 3 class hours per week.

GV3350 Soviet Politics and Society: A 1-semester course; 3 credit hours. This course

will examine the political organization of the Soviet Union and the impact of politics on society. After some historical background, the course will focus on a variety of topics including the structure of the government, the role of the communist party, the organization of the economy, social services, class structure and human rights. 3 class hours per week.

Health Services

HS6651 Introduction to Health Services: A 1-semester course; 3 credit hours. A survey course to provide the student with a comprehensive overview of the health care delivery system and its integration with the community. Some of the topics to be covered are orientation to health professions, organizational patterns of health care, financing of health care, proposed state and federal legislation and medicolegal standards. Field trips and guest lecturers will be utilized. 3 class hours per week.

HS6710 Emergency Medical Technician: A 1-semester course; 7 credit hours. Specialized training for employees or volunteer members of public or private organizations having a responsibility for delivery of emergency care. The course is conducted by the college in cooperation with the Merrimack Valley Emergency Medical Council, Inc. Training areas covered will be respiration and resuscitation; medical and environmental emergencies, including unscheduled childbirth; injuries to the skull, brain, neck and spine; and bleeding, wounds and shock. Students must pass this course in order to be eligible to take the State Registry Exam for Emergency Medical Technicians. 7 class hours per week.

History

HI9900 The Contemporary World: A 1-semester course; 3 credit hours. A survey of important political, social, economic and cultural developments in the world since 1945. Emphasis will be placed on the nuclear arms race, the Cold War, upheaval and transformation in the Third World, and the

rearrangement of the world balance of political and economic power. 3 class hours per week.

HI9901 Western Civilization I: A 1-semester course; 3 credit hours. A survey of the major historical developments and trends in Western Civilization from the Fall of Rome to 1715, with emphasis on the formation and evolution of the social, political, economic, and cultural institutions of medieval and early modern Europe. 3 class hours per week.

HI9902 Western Civilization II: A 1-semester course; 3 credit hours. A survey of the major historical developments and trends in Western Civilization from 1715 to the present, with emphasis on the evolution of social, political, economic, cultural institutions in modern Europe. 3 class hours per week.

HI9903 Early Civilization: A 1-semester course; 3 credit hours. A survey of the major historical developments and trends in the rise of the West from their origins in the Ancient Near East through Classical Greece and Rome to the decline and fall of the Roman Empire and the rise and triumph of Christianity. Attention is given to the formation and evolution of social, political, and economic institutions as well as intellectual, religious, and cultural achievements. 3 class hours per week.

HI9913 U.S. History I: A 1-semester course; 3 credit hours. A survey of United States history from colonial times through the Civil War. Traces and development of political, social, cultural and economic institutions. 3 class hours per week.

HI9914 U.S. History II: A 1-semester course; 3 credit hours. A survey of United States history from reconstruction to the present. Examines political, social, cultural and economic institutions of the U.S. Focuses on the extension of those institutions through imperialism and the challenges to them by the depression and two world wars. 3 class hours per week.

HI9916 Recent U.S. History: A 1-semester course; 3 credit hours. Seminar on American history since World War II. Directed readings and emphasis on the major areas of recent

national concern such as the "welfare state," foreign affairs, changes in American society, the "urban crisis" in the postwar years, etc. In addition, projects, the intent of which is to depict some perspectives on contemporary America, are assigned. 3 class hours per week.

HI9917 The Family in History: A 1-semester course; 3 credit hours. An analysis of the changes in the structure and functions of the family in Western Europe and America from the 16th century to the present. Special emphasis will be placed upon the impact of industrialization and modernization upon the family and its individual members. 3 class hours per week.

HI9955 Minority Groups in America: A 1-semester course; 3 credit hours. Seminar on the contributions and difficulties of religious, racial, ethnic and other minority groups in the pluralistic American society from colonial times to the present. Particular attention will be given to the following groups: Catholic and Jewish, American Indian, Negro and Puerto Rican, and southern European and Oriental. Students will research, write and present individual reports. 3 class hours per week.

HI9956 American Foreign Policy: A 1-semester course; 3 credit hours. A survey of United States foreign affairs from revolutionary times to the present. Special emphasis on America's emergence as a world power and her relationship with Europe, Latin American and the Far East. Attention will be paid to the developing roles of the President and the State Department, Congress and international organizations in our foreign policy. 3 class hours per week.

HI9958 History of the Soviet Union: A 1-semester course; 3 credit hours. Study of Russia since the overthrow of the Czar in March 1917. Special emphasis is placed on the origin of Russian Communism, the role of Lenin and Stalin in adapting Communism to Russian conditions, the evolution of Communism since Stalin's death in 1953, and Soviet foreign policy, especially since World War II. 3 class hours per week.

HI9959 History of Latin America: A 1-semester course; 3 credit hours. A survey of the historical development of Latin America

from the preconquest societies to the present time. Emphasis is placed on the contributions made by the Indian traditions, the European conquerors, and the fusion of these two elements in the years following independence. The relationship between the United States and Latin America will be given special attention. 3 class hours per week.

HI9961 History of Science & Technology: A 1-semester course; 3 credit hours. The study of the historical and philosophical development of science and technology and the practical consequences of discovery on the human activities. The course focuses on the examination of the interplay of science and technology with their social and intellectual impact through the ages. The course may be applied towards a social science or a natural science requirement. 3 class hours per week.

HI9962 Women's History: Giving the Majority Its Past: A 1-semester course; 3 credit hours. Women's experience has always made up half the past, thus, their lives and concerns are as important in the study of history as those of men. Introducing students of both sexes to admirable people, male and female, is important, both for an understanding of what was possible and achieved in former times, and what one can become in today's world, drawing on that past heritage. This course examines those cultural assumptions by which a society measures the significance of all our lives. What do our instructional institutions (family, church, schools and media) teach us about individual values: what is expected of a little girl when she grows up and a little boy when he matures? Are these expectations realistic or biased? Does a double standard in income, morality and opportunity still exist? Women's history raises such questions and offers a challenge to teachers and students alike. The particular emphasis in period and culture will be determined by the instructor. 3 class hours per week.

Hotel & Restaurant Management

HR6610 Introduction to Hospitality Management: A 1-semester course; 3 credit

hours. Introduction of hospitality-related topics as they apply to the organization of hotels and restaurants: management, marketing, cost control and service. 3 class hours per week.

HR6620 Hotel and Motel Management: A 1-semester course; 3 credit hours. Through an examination of the various operational divisions of hotel/motel management, the student is given a comprehensive managerial overview of the business. Topics include organization, control, planning, financial management, safety, insurance, and marketing and sales. 3 class hours per week.

HR6630 Food and Beverage Management: A 1-semester course; 3 credit hours. The study of food and beverage management and marketing systems, menu-planning, purchasing, production, service and control. 3 class hours per week.

HR6635 Front Office Procedures: A 1-semester course; 3 credit hours. A study of the flow of operations and functions performed at the front desk in the hospitality industry with a comparison of manual, machine-assisted and computerized methods for each procedures. 3 class hours per week.

HR6640 Hotel and Restaurant Law: A 1-semester course; 3 credit hours. A study of the laws applicable to hotel, motel and restaurant operations. Topics include state statutes and law governing innkeepers' liability, the policy of disclaimer of liability, safety in service, and responsibilities to registered and non-registered guests. 3 class hours per week.

HR6645 Hospitality Seminar: A 1-semester course; 2 credit hours. A course designed to study current issues in the hospitality industry. Guest speakers from the field and a review of the literature of recent trade journals will be featured. 2 class hours per week.

Humanities

HU4000 Introduction to Humanities: A 1-semester course; 3 credit hours. Through thematically selected works of literature, film, music, art, religion, and philosophy, this team-taught course focuses on the individual's concept of self (identity, purpose, goals,

destiny) and the individual's relationship to community (ethics, values, justice) as explored in the traditional and nontraditional intellectual and artistic heritage of humanity. 3 class hours per week.

HU4011 Art, Math and Nature: A 1-semester course; 3 credit hours. This team-taught course, a joint venture of Bradford College and Northern Essex, explores the connections and relationships that exist in the world of nature, the world of forms and the world of ideas. It also examines the use of mathematics as an artistic tool for both two and three-dimensional design. 3 class hours per week.

Interpreter Training

IN0010 Basic American Sign Language I: An 8-week course; 1 credit hour. Designed to present basic grammatical rules in the use of American Sign Language (ASL). Visual-gestural communication, ASL vocabulary, manual alphabet/numbers, and general information related to Deaf Culture will also be covered. The class will be taught primarily in ASL. 2 class hours per week.

IN0011 Basic American Sign Language II: An 8-week course; 1 credit hour. Designed to be a continuation of Basic American Sign Language I. There will be further development of grammatical rules in the use of American Sign Language (ASL). Additional development of ASL vocabulary, finger-spelling/numbers, and information about Deaf Culture will also be addressed. The class will be taught primarily in ASL. 2 class hours per week. **Prerequisite:** Basic American Sign Language I with a grade of C or better.

IN0012 Basic American Sign Language III: An 8-week course; 1 credit hour. Designed to be a continuation of Basic American Sign Language II. There will be exposure to more complex grammatical rules in the use of American Sign Language (ASL). Additional development of ASL vocabulary and information related to Deaf Culture will also be covered. The class will be taught primarily in ASL. 2 class hours per week. **Prerequisite:** Basic American Sign Language II or Conversational American Sign Language I

with a grade of C or better.

IN0013 Basic American Sign Language IV: An 8-week course; 1 credit hour. Designed to be a continuation of Basic American Sign Language III. There will be further study of complex grammatical rules in the use of American Sign Language (ASL). Additional ASL vocabulary development and information pertaining to the Deaf Culture will also be addressed. The class will be taught primarily in ASL. 2 class hours per week. **Prerequisite:** Basic American Sign Language III with a grade of C or better.

IN0040 Introduction to American Sign Language: A 1-semester course; 3 credit hours. An introductory course examining the history, literature and culture of individuals who use American Sign Language (ASL). Basic grammatical rules in the use of ASL, basic ASL vocabulary, manual alphabet/numbers, and visual-gestural communication will also be covered. This class will be taught primarily in ASL. All outside assignments are intended to facilitate awareness of Deaf Culture and ASL. 3 class hours per week.

IN0050 Conversational American Sign Language I: A 1-semester course; 2 credit hours. Designed to present basic grammatical rules in the use of American Sign Language (ASL). Basic ASL vocabulary, manual alphabet/numbers, visual-gestural communication, and information related to Deaf Culture will also be covered. All lecture, laboratory activities, and outside assignments are intended to develop basic competence in receptive and expressive use of ASL. The class will be taught primarily in ASL. Deaf and hearing-impaired individuals have priority in securing seats in this course. 1 class hour and 2 lab hours per week.

IN0060 Conversational American Sign Language II: A 1-semester course; 3 credit hours. Designed to be a continuation of Conversational American Sign Language I. There will be exposure to complex grammatical rules in the use of American Sign Language (ASL). Additional ASL vocabulary development, fingerspelling/numbers, and information related to Deaf Culture will also be addressed. All lecture, laboratory activities,

and outside assignments are intended to develop further competence in receptive and expressive use of ASL. The class will be taught primarily in ASL. Deaf and hearing-impaired individuals have priority in securing seats in this course. 2 class hours and 2 lab hours per week. **Prerequisite:** Conversational American Sign Language I or Basic American Sign Language I and II with a grade of C or better.

IN1010 Orientation to Deafness: A 1-semester course; 3 credit hours. An introductory course examining various aspects of deafness. Information about the hearing mechanism, hearing disorders, audiological assessment, types of educational settings and rehabilitation recommended. Various professions within the field of deafness, legislation impacting the field of deafness, and current events and activities occurring related to the field of deafness will be presented and discussed. 3 class hours per week.

IN1030 Introduction to the Interpreting Field: A 1-semester course; 3 credit hours. Provides general information about the field of interpreting; stressing the importance of a professional attitude toward interpreting, especially as developed through observance of ethical standards. Understanding these aspects of interpreting is enhanced through participation in an observation practicum. 3 class hours per week. **Prerequisite:** Basic American Sign Language I, Conversational American Sign Language I, American Sign Language I, or Introduction to American Sign Language with a grade of C or higher, or simultaneous enrollment in any of these courses.

IN1041 Introduction to Practicum: A 1-semester course; 2 credit hours. Emphasizes the important aspects of professional interpreting (e.g., physical factors, mode of communication employed, professional attitude and approach to assignment, etc.). The field experience will provide both the opportunity to observe the material discussed in the classroom and to participate in actual interpreting situations. 1 classroom seminar plus 4 field hours per week. **Prerequisite:** Should be taken in conjunction with Introduction to the Interpreting Field or with

coordinator's approval.

IN2029 Interpreting: A 1-semester course; 4 credit hours. Designed to develop a broad base of competency and performance skills in transliterating and interpreting. Emphasis is on an in-depth study of the principles of interpreting and their incorporation into specific interpreting situations. 3 class hours and 3 lab hours per week. **Prerequisite:** Introduction to the Interpreting Field, American Sign Language II with a grade of C or better, and simultaneous enrollment in American Sign Language III.

IN2033 Advanced Interpreting: A 1-semester course; 4 credit hours. Involves further emphasis on developing competency and skills in transliterating and interpreting. A variety of learning activities aimed at strengthening interpreting techniques are conducted. 3 class hours and 3 lab hours per week. **Prerequisite:** Introduction to the Interpreting Field, Interpreting, and American Sign Language III with a grade of C or better.

IN2039 Practicum I: A 1-semester course; 3 credit hours. Emphasizes the means for successful performance in professional interpreting situations. Field experience allows students to put theory into practice by providing opportunities for participation in various interpreting settings. 1 class hour plus 8 field hours per week. **Prerequisite:** Introduction to the Interpreting Field, Introduction to Practicum, simultaneous enrollment in Interpreting and coordinator's approval.

IN2041 Practicum II: A 1-semester course; 3 credit hours. Provides advanced students with the opportunity to function in actual interpreting situations with professional advice and support. This supervised work experience is to be the final phase of preparation prior to entry into the field of professional interpreting. 1 class hour plus 8 field hours per week. **Prerequisite:** Introduction to the Interpreting Field, Introduction to Practicum, Practicum I, simultaneous enrollment in Advance Interpreting and coordinator's approval.

Italian

IT4401/IT4401 Introductory Italian I and II: A 2-semester course; 3 credit hours per semester. For students who have not completed two years of secondary school Italian or the equivalent as determined by the college. Audio-lingual emphasis. Introduction to grammatical patterns, reading and writing. 3 class hours per week.

Law

LW6630 Business Real Estate Law: A 1-semester course; 3 credit hours. This course treats the area of American Law that applies to the business of Real Estate. The focus is in four major areas of Real Estate: (1) the general nature of the legal system and real property; (2) the transfer of real estate; (3) land use regulations; and (4) landlord and tenant law. The substance of the material covered combines lectures, text, short case summaries, actual court case decisions and problems. 3 class hours per week.

LW6640 Introductory Seminar for Paralegals: A 1-semester course; 1 credit hour. An introductory seminar to prepare paralegal students for the study of law-related subjects and the use of legal materials. Emphasis will be placed on practical matters with regard to notetaking and analysis. Also, an overview of career expectations and employment opportunities for Paralegals. Special consideration will be given to the ethics of the paralegal profession. 1 class hour per week.

LW6642 Advanced Seminar for Paralegals: A 1-semester course; 1 credit hour. To prepare paralegal students for employment upon graduation from the program and specifically to acquaint them with the practical aspects of their future profession. Special consideration will be given to the ethical and legal aspects of performing paralegal functions without stepping over the bounds into the actual practice of law. Job search strategies and interview techniques will also be stressed. 1 class hour per week.

LW6651 Business Law I: A 1-semester course; 3 credit hours. A course presenting an

integrated approach to the “legal environment of business” with a fresh up-to-date introduction to those aspects of our legal system which cut across all areas of law, establishing a vital foundation for understanding the substantive subjects such as the American system of jurisprudence, constitutional law, the dual court system, administrative agencies, consumer protection, environmental law, the Uniform Commercial Code, torts and crimes, and a thorough understanding of the Law of Contracts. 3 class hours per week.

LW6652 Business Law II: A 1-semester course; 3 credit hours. A continuation of LW6651 developing a basic understanding and application of the Uniform Commercial Code consisting of sales, commercial paper, Law of Agency, banking, Letter of Credit, bulk transfer, documents of title, investments and secured transactions, and a general understanding of business organizations, bankruptcy, and estates and trusts. 3 class hours per week. **Prerequisite:** LW6651.

LW6653 Real Estate Law: A 1-semester course; 3 credit hours. This course is designed to introduce the student to the fundamentals of real estate law and practice. The content will develop antecontractual considerations, suggested forms and content of a real estate contract, closing requirements, and title searches and provisions. Emphasis will be placed on title abstracting and on residential closing procedures in order to enable the student to prepare independently a title abstract and all closing papers ready for the attorney's review. Strongly recommend that students take GV3300 Introduction to Law prior to or simultaneously with this course. 3 class hours per week. **Prerequisite:** LW6670 Legal Research and Drafting. Students not enrolled in the Paralegal degree program need permission of the program coordinator to enroll in this course.

LW6661 Litigation: A 1-semester course; 3 credit hours. This course is designed to provide the student with background in the structure, jurisdiction and procedure of the state and federal courts. Students will learn to interview clients, research and investigate facts, prepare motions and other litigation materials and become familiar with discovery

procedures available under the Rules of Procedure and Rules of Evidence. It is strongly recommended that GV3300 Introduction to Law be taken prior to this course. 3 class hours per week. **Prerequisite:** LW6670 Legal Research and Drafting. Students not enrolled in the Paralegal program need permission of the program coordinator to enroll in this course.

LW6662 Wills, Estates, & Trusts: A 1-semester course; 3 credit hours. This course is designed to introduce the student to a survey of estate administration, the proper court and probate proceeding, including wills (probate and administration), distribution, descent, fiduciary accounting, and many different kinds of trusts. It is strongly recommended that GV3300 Introduction to Law be taken prior to or simultaneously with this course. 3 class hours per week. **Prerequisite:** LW6670 Legal Research and Drafting. Students not enrolled in the Paralegal program need permission of the program coordinator to enroll in this course.

LW6663 Corporate Law: A 1-semester course; 3 credit hours. This course treats corporation formation and structure, stockholders' and directors' meetings, corporate financing (stock and other securities, charter amendments and changes in corporate structure), reorganization, dissolution, liquidation, employment and compensation. Students will acquire functional skills including preparing of articles of incorporation, satisfying state filing requirements, preparing necessary documentation for mergers and new acquisitions, and preparing registration materials for regulatory agencies. It is strongly recommended that GV3300 Introduction to Law be taken prior to or simultaneously with this course. 3 class hours per week. **Prerequisite:** LW6670 Legal Research and Drafting. Students not enrolled in the Paralegal program need permission of the program coordinator to enroll in this course.

LW6664 Domestic Law: A 1-semester course; 3 credit hours. This course is designed to teach the student to handle sensitive client interviews and to draft the pleadings necessary to the general practice of domestic law.

The student should learn and understand procedures and practices relating to parental prerogatives, marriage, separation, divorce, custody and support, adoption and guardianship, and be able to draft the pleadings and do preliminary research pertaining to these aspects of family law. It is strongly recommended that GV3300 Introduction to Law be taken prior to or simultaneously with this course. 3 class hours per week. **Prerequisite:** LW6670 Legal Research and Drafting. Students not enrolled in the Paralegal program need permission of the program coordinator to enroll in this course.

LW6665 Taxation: A 1-semester course; 3 credit hours. This course is designed to introduce the student to the historical development of federal tax law and the underlying rationale for U.S. and state tax systems. Tax concepts as they relate to procedural and substantive aspects for filing and executing individual, corporate, partnership and fiduciary tax returns (income estate and gifts) will be discussed. Abstracting data for tax audits, appellate procedures and judicial determination, as well as updates to reflect changes in the tax law are included. (This is not a tax preparation course.) It is strongly recommended that GV3300 Introduction to Law be taken prior to or simultaneously with this course. 3 class hours per week. **Prerequisite:** LW6670 Legal Research and Drafting and LW6663 Corporate Law. Students not enrolled in the Paralegal program need permission of the program coordinator to enroll in this course.

LW6670 Legal Research and Drafting: A 1-semester course; 4 credit hours. The purpose of this course is to introduce the student to the use of the law library and legal materials including law review articles and legal encyclopedias. The student will receive practical experience in the research and preparation of case briefs and memoranda on legal issues with emphasis on the laws of the Commonwealth of Massachusetts and its court system. Students will be required to use area law libraries to complete many assignments. Computer-aided legal research and an occasional field trip will be integral parts of the course. Limited to 20 students. 3 class

hours per week. **Prerequisite:** Students must qualify at the English Composition I level.

Management

MG6651 Industrial Management: A 1-semester course; 3 credit hours. Overview of manufacturing operations. All aspects of the production function are discussed: capital investment, assembly-line operation, plant location, product design, time study, purchasing and other topics. 3 class hours per week.

MG6653 Industrial Purchasing: A 1-semester course; 3 credit hours. The course provides a comprehensive knowledge of modern purchasing practices. It combines analysis of the fundamental purchasing principles with analytical descriptions of the latest developments and techniques. The fundamentals of the buying process are related to the new expanded role of the purchasing department. Students are given the opportunity to test their understanding of what has been covered by the inclusion of case problems drawn from contemporary industry. 3 class hours per week.

MG6654 Purchasing I: A 1-semester course; 3 credit hours. This course is designed as the first of two offerings in purchasing management technology. Emphasis will be placed on the management and in-house organization of the purchasing department. Topics include: purchasing procedures, information flow systems, standards and specifications, quality and inspection, and decision-making techniques for quantity considerations, supplier selection and price determination. 3 class hours per week.

MG6655 Purchasing II: A 1-semester course; 3 credit hours. A continuation of Purchasing I, this course will cover additional topics in purchasing technology. Contents include: ethics and the law, negotiations, capital goods, commodities and foreign purchasing, disposal of surplus, transportation, research, planning and budgeting, and performance evaluation. 3 class hours per week. **Prerequisite:** Purchasing I.

MG6656 Commodity Purchasing: A 1-semester course; 3 credit hours. This course is

designed to provide the student with an in-depth analysis of purchasing techniques as they relate to specific commodities. Course contents are presented through actual case studies, and topics include special inventory, transportation, specifications and quality problems involved in the purchasing of electronic parts, construction materials, hospital supplies, chemicals, fuel, services, etc. 3 class hours per week.

MG6666 Principles of Management: A 1-semester course; 3 credit hours. An introduction to the principles and practices of management, with emphasis on the management functions of planning, organizing, staffing directing and controlling. The course serves the dual purpose of giving the students a basic foundation of management concepts and an understanding of the organization within which they must work. 3 class hours per week.

MG6676 Personnel Management: A 1-semester course; 3 credit hours. Principles and human relations problems involved in the administration of personnel. Topics include job analysis and specification, recruitment, selection and training, job evaluation, supervision of employees, and salary and wage administration and labor relations. 3 class hours per week.

MG6686 Small Business Management: A 1-semester course; 3 credit hours. This course will cover the challenges and objectives of owning a small business. It will identify the types of individuals who ought to consider self-entrepreneurship as well as what type of business one should enter. Full planning and executing of the start-up of a small business and/or entering an existing business. Planning, organizing, directing and controlling the activities of the firm. 3 class hours per week.

MG6690 Introduction to Management Information: A 1-semester course; 3 credit hours. This course is designed to provide a descriptive and functional definition of management information concepts. The organization will be viewed as a total system with three subsystems: management, operations and information. The student will identify and examine the interactions of the

information subsystem, scheduling, production, inventory, sales, purchasing, planning, finance, accounting and personnel. The student will become familiar with information requirements of an organization and the interactions of systems hardware, software and data management. 3 class hours per week.

MG7701 Principles of Materials

Management: A 1-semester course; 3 credit hours. This course is designed to introduce the student to materials management. From a broad review of the growth of modern material control theories and principles, this course progresses to a detailed review of the major functional areas within materials: production control, inventory control, purchasing, shipping, receiving, stockrooms and traffic. 3 class hours per week.

MG7702 Production Activity Control: A 1-semester course; 3 credit hours. This course introduces students to the techniques and principles used by managers to plan, schedule, control and measure the effectiveness of factory production operations. 3 class hours per week. **Prerequisite:** Principles of Materials Management or equivalent field experience.

MG7703 Capacity Management: A 1-semester course; 3 credit hours. This course is designed to develop an understanding of the principles and techniques employed in manufacturing operations to plan and control factory capacities. 3 class hours per week. **Prerequisites:** Principles of Materials Management or equivalent field experience.

MG7704 Inventory Management: A 1-semester course; 3 credit hours. This course includes a study of general inventory management, inventory management systems, and finished goods distribution. General inventory management addresses objectives and decisions, accounting and control of inventory, and the relationship of inventory management to other business functions. Inventory management systems deals with the mathematical models used to describe and predict inventory results. Finished goods distribution develops the procedures and rules used to achieve inventory results in this area. 3 class hours per week. **Prerequisite:**

Principles of Materials Management or equivalent field experience.

MG7705 Master Planning: A 1-semester course; 3 credit hours. This course covers two related areas: forecasting, which is concerned with future predictions, and master scheduling, which is concerned with the preparation and maintenance of an anticipated build schedule and master game plan. 3 class hours per week. **Prerequisite:** Principles of Materials Management or equivalent field experience.

MG7706 Material Requirements Planning: A 1-semester course; 3 credit hours. This course covers the principles of material requirements planning or MRP, a timed-phased planning technique that combines two ideas: calculation of dependent demand for component items and the addition of timing to inventory status data. Three class hours per week. **Prerequisites:** Principles of Materials Management or equivalent field experience.

Marketing

MK6678 Principles of Marketing: A 1-semester course; 3 credit hours. Introduction to marketing with emphasis placed on the firm as a marketing system which must survive in its external environment of markets, resources and the general society. The concepts of market segmentation, corporate objectives, marketing strategies and marketing information systems will be stressed. 3 class hours per week.

MK6679 Advertising: A 1-semester course; 3 credit hours. Analysis of buying motives and the development of various advertising appeal. Planning, budgeting and testing of phases of the program and the several advertising media. 3 class hours per week.

MK6680 Retailing: A 1-semester course; 3 credit hours. Basic elements of retail merchandising. Types and organization of retail outlets. Buying, pricing, dollar and unit stock control, sales promotion, and expense budgets. 3 class hours per week.

MK6681 Salesmanship: A 1-semester course; 3 credit hours. Fundamentals of salesmanship by studying the behavioral

aspects of the persuasion process; a systematic approach to selling which the student can use to develop the techniques which fit his own personality and particular situation. 3 class hours per week.

MK6682 Case Studies in Marketing: A 1-semester course; 3 credit hours. Students will learn to analyze, prepare, present and discuss marketing case studies. Case problems will be presented to students to enable them to understand and solve problems involving market segmentation, market research, pricing, product strategy, promotion, physical distribution and channel management. 3 class hours per week. **Prerequisite:** MK6678 or equivalent with permission of instructor.

Mathematics

Note: For all mathematics courses involving prerequisites it is recommended that the student earn a "C" or better in the prerequisite course before attempting the next course in the sequence.

MA0020 Basic Mathematics: A 1-semester course; 3 credit hours. The course is designed to provide basic mathematics skills required in other courses. Topics include complete review of arithmetic and introduction to algebra and geometry, emphasizing practical applications. This course may not be used to satisfy mathematics requirements for the associate degree in Liberal Arts. 3 class hours and 1/2-hour computer lab per week.

MA0030 Basic Algebra: A 1-semester course; 3 credit hours. The course is designed to prepare students for other courses which require basic skills in algebra and will include, whenever facilities permit, hands-on experience in the microcomputer lab. Topics include integers, linear and quadratic equations, factoring exponents and radicals, algebraic fractions, linear systems and word problems. This course may not be used to satisfy mathematics requirements for the associate degree in Liberal Arts. 2 class hours per week: 2-1/2 lab hours and 1/2-hour computer lab per week. **Prerequisite:** Basic arithmetic competency.

MA0551 Basic Geometry: A Lab Course: A 1-semester course; 1 credit hour. The course is designed as an introduction for students with a limited background in the basic concepts of Geometry. Topics include lines, triangles, circles, areas of plane figures, parallelograms and volumes. All students must attend individualized lab sessions a minimum of 2 hours per week. However, the number of extra hours that any particular student spends in the lab is dependent on his beginning skills level.

MA5500 Intermediate Algebra: A 1-semester course; 3 credit hours. The course is designed as a sequel to Basic Algebra or as a first course for students who have had at least one year of high school algebra. It will prepare students for Quantitative Methods and the Calculus for Business/Social/Life Sciences sequence as well as for higher-level course in algebra. Topics include review of Basic Algebra, fractional equations, radical equations, functions, logarithmic and exponential functions. This course will not satisfy mathematics requirements for Engineering and Technology programs nor may it be used as an elective in Engineering and Technology. 3 class hours per week.

Prerequisite: One year of high school algebra or a "C" or better in Basic Algebra.

MA5506 Statistics: A 1-semester course; 3 credit hours. Set theory approach to probability. Descriptive statistics. Probability distributions. Sampling inferences from statistics. Hypothesis testing. Linear regression and correlation. 3 class hours per week. **Prerequisite:** One year of high school algebra or consent of instructor.

MA5512 Mathematics for Elementary Education: A 1-semester course; 3 credit hours. A mixture of content and teaching methods, this course explores in detail various mathematical concepts which are normally taught in elementary school. Emphasis is given to concrete materials and to applications of mathematics to the real world. The course may also include a review of personal arithmetic skills and a term project requiring activity with children. This course may not be used to satisfy math requirements for the Liberal Arts degree. 3 class hours per week.

MA5520 Liberal Arts Mathematics I: A 1-semester course; 3 credit hours. This course is designed to develop an appreciation of mathematics by exploring areas which are of interest to the liberal arts student. The instructor will choose topics from a wide variety of areas such as mathematical logic, set theory, number systems, consumer mathematics, and geometry. The course will also include a review of basic arithmetic skills. 3 class hours per week.

MA5525 Liberal Arts Mathematics II: A 1-semester course; 3 credit hours. The objectives are similar to those of Liberal Arts Mathematics I. Liberal Arts Mathematics II is designed to allow the student to explore some of the interesting and useful aspects of mathematics. The instructor will choose topics from a wide variety of areas such as probability, statistics, topology, fourth dimension, philosophy of mathematics and computer programming. 3 class hours per week.

MA5610 Shop Geometry & Trigonometry: A 1-semester course; 2 credit hours. This course covers the fundamentals of industrial geometry and trigonometry. Geometry formulas, shapes and constants used in the shop will be reviewed. The essentials of trigonometry covered are the right triangle, trigonometric functions, use of calculators and tables, finding angles and solution of right triangles. 1 class hour and 2 lab hours per week. **Prerequisite:** High school algebra, Basic Mathematics or course waiver by math assessment test.

MA5620 Mini Trig: A 1-semester course; 1 credit hour. An introduction to trigonometry designed for the student with two years of high school algebra, but little or no trigonometry. This course covers all the trigonometric topics discussed in MA5621. 1 class hour per week.

MA5621 College Algebra & Trigonometry: The first course in a 2-semester sequence: 4 credit hours. This course and its sequel MA5622 are intended as preparation for the calculus sequence MA5690, MA5692, MA5693. Topics are selected from algebra and introductory trigonometry. 4 class hours

per week or 3 class hours plus a 2-hour problem session per week. **Prerequisite:** Two years of high school algebra or MA5500 or equivalent.

MA5622 Advanced Algebra &

Trigonometry: The second course in a 2-semester sequence; 4 credit hours. A continuation of MA5621. Advance topics in algebra and trigonometry are covered. 4 class hours per week or 3 class hours plus a 2-hour lab per week. **Prerequisite:** MA5621 or equivalent.

MA5650 Technical Mathematics: A 1-semester course; 4 credit hours. Selected basic mathematical concepts are presented in a carefully ordered sequence intended to prepare students of varied backgrounds for necessary mathematical applications in particular technical certificate programs. Topics chosen reflect particular certificate program needs and will vary depending on the certificate program for which the course is offered. 4 class hours per week.

MA5651 Calculus for Technology: A 1-semester course; 4 credit hours. For students enrolled in a technology curriculum. The course covers limits and differentiation and integration of algebraic exponential, logarithmic and trig functions, applications to maximum-minimum, related rates, acceleration, area, volume and curve sketching problems. Other topics include integration by parts, substitution methods and use of integral tables. 4 class hours per week. **Prerequisite:** MA5622 or equivalent.

MA5667 Introduction to Finite

Mathematics: A 1-semester course; 3 credit hours. Primarily for students in business programs, this course includes an introduction to probability, statistics, game theory, linear programming, and computers. 3 class hours per week.

MA5670 Calculus for Electronics: A 1-semester course; 3 credit hours. For students enrolled in Electronic Technology. The course covers limits and differentiation and integration of algebraic, exponential, logarithmic and trigonometric functions, applications to maximum-minimum, related rates, area under a curve and curve sketching. 3 class hours per week. **Prerequisite:** MA5622 or equivalent.

MA5673 Quantitative Methods for

Business/Social/Life Sciences: A 1-semester course; 3 credit hours. Topics included in this algebra-based course are matrices, linear systems of equations and inequalities, linear programming, probability, decision theory and statistics. Special emphasis is given to applications in business, social and life sciences. 3 class hours per week.

Prerequisite: MA0030 or two years of high school algebra.

MA5675 Calculus I for Business/Social/Life

Sciences: The first course in a 2-semester sequence; 3 credit hours. Topics included in this algebra-based course are polynomial, exponential and logarithmic functions, limits and differentiation. Special emphasis is given to applications in business, social and life sciences. 3 class hours per week.

Prerequisite: Two years of high school algebra, MA5500 or equivalent.

MA5676 Calculus II for Business/Social/

Life Sciences: The second course in a 2-semester sequence; 3 credit hours. A continuation of MA5675. This course includes techniques of integration, differential equations, and multi-variable functions. 3 class hours per week. **Prerequisite:** MA5675.

MA5685 Differential Equations: A 1-semester course; 4 credit hours. Fundamentals of ordinary linear differential equations. LaPlace Transforms, numerical methods of solutions, etc. 4 class hours per week.

Prerequisite: C or better in MA5693 or equivalent.

MA5687 Contemporary Math for

Electronics: A 1-semester course; 4 credit hours. A course with electronic calculators as an integral part of the study of the mathematical topics necessary for further work in electronics. Included are topics from algebra, linear equations and determinants, trigonometry, logarithms, computer arithmetic and boolean algebra. 4 class hours per week.

Note: This course intended only for students in the Computer Servicing certificate program or other technical certificate programs.

MA5690 Calculus I: The first course in a 3-semester sequence; 4 credit hours. This sequence is designed for the Engineering,

science or mathematics major who needs to master the techniques of calculus. Beginning with functions and limits, this course includes techniques and applications of differentiation, indefinite and definite integrals and applications of integration including area and volume. 4 class hours per week. **Prerequisite:** Two years of high school algebra and a semester of trigonometry, MA5622, or equivalent.

MA5692 Calculus II: The second course in a 3-semester sequence; 4 credit hours. This course is a continuation of MA5690. Topics include techniques of integration, improper integrals, series and polar coordinates. 4 class hours per week. **Prerequisite:** C or better in MA5690 or equivalent.

MA5693 Calculus III: The third course in a 3-semester sequence; 4 credit hours. This course is a continuation of MA5690 and MA5692. Topics include vector calculus, partial differentiation and multiple integration. 4 class hours per week. **Prerequisite:** C or better in MA5692 or equivalent.

Medical Record Technology

MR3020 Organization, Operation & Quality Assurance in a Tumor Registry: A 1-semester course; 2 credit hours. This course outlines the organizational characteristics of tumor registries and how they relate to the type and purpose of the registry. It covers the methods used in planning, organizing and operating a registry. It outlines the uses of the medical record as the principal source document for data collection and the relationship with the medical record department and other departments within the hospital. It also briefly outlines the content and format of the medical record, record systems and policies of medical record administration. The course includes a description of the relationship of the tumor registrar to the health legislation, accreditation standards, funding and the impact of professional and voluntary organizations. A module covering automated data processing as it relates to registry data, and planning and implementing a computer data system is also included. Finally, quality assurance in the tumor registry is covered to

tie up all of these elements. Must be taken concurrently with MA3009 Cancer Coding, Statistics and Epidemiology. 2 class hours per week.

MR3030 Residency Training for Tumor Registrars: A 1-semester course; 2 credit hours. This course requires two 8-hour days per week for 8 weeks of practical experience in an actual tumor registry under the guidance of an experienced tumor registrar. A time-frame for each aspect of the residency will be set and the student gets experience in each area. This will be offered during the Spring semester. A minimum of 128 hours of practical experience is required. Must be taken concurrently, in the second semester, with MR3020 Organization, Operation and Quality Assurance in a Tumor Registry.

MR6605 Medical Terminology I: A 1-semester course; 3 credit hours. A study of basic prefixes, suffixes, roots, abbreviations, symptomatic, disease, operative, and drug terminology. Terms will be taught by anatomical system with lectures on the anatomy of the system included. The following systems are covered: integumentary, musculo-skeletal, cardiovascular, blood and blood forming organs. 3 class hours per week.

MR6606 Medical Terminology II: A 1-semester course; 3 credit hours. A study of prefixes, suffixes, roots, abbreviations, symptomatic, disease, and operative terminology of the following systems are covered: digestive, respiratory, neurological, urogenital, maternal and antenatal, endocrine, organs of special sense, and systemic diseases. Also selected laboratory terms and selected medical terms relating to psychiatry are covered. 3 class hours per week.

Prerequisite: MR6605 Medical Terminology I.

MR6610 Medical Record Science I: A 1-semester course; 3 credit hours. The beginning of a series of courses designed to instruct students in the theory and principles of Medical Record Technology. Subjects covered are orientation to medical record field, admitting areas, medical record forms and content, medical record formats (e.g.,

problem-oriented medical record), numbering and filing systems, record retention procedures, storage and retrieval systems, medical staff organization and by-laws. 3 class hours per week.

MR6612 Medical Record Science II: A 1-semester course; 3 credit hours. Course includes the study of principles of law as related to patient care and medical records, state and federal legislation regulating health care facilities or the delivery of health care services, study of health accrediting agencies: Medicare, Medicaid, P.R.O. 3 class hours per week. **Prerequisite:** MR6610; must be taken concurrently with MR6620.

MR6614 Medical Record Science III: A 1-semester course; 3 credit hours. Study of basic principles of compiling statistics for hospitals and other medical facilities. Topics include the daily census; analysis of hospital services; monthly, annual and special reports; methods of recording vital statistics; definitions and formulas, data abstracting systems, data entry and retrieval. Topics covered also include record systems in alternative health care settings (e.g., doctor's office, long term care, psychiatric, rehabilitation, HMO, ambulatory care and home health agencies). 3 class hours per week. **Prerequisite:** MR6612 and MR6620.

MR6616 Medical Record Science IV: A 1-semester course; 3 credit hours. Topics covered include quality assurance concepts and methodologies as they relate to the medical record keeping function. A study of the prospective payment system including DRG's, casemix and PRO's is integrated with management of a medical record department. Management aspects covered include management of the transcription area, casemix management, quality assurance, utilization review, and risk management and the medical record department. 3 class hours per week. **Prerequisite:** MR6614; must be taken concurrently with MR6622.

MR6620 Directed Practice I (Medical Record): A 1-semester course; 4 credit hours. Supervised practice in the medical record department of a community hospital affiliated with the Medical Record Program. Students

participate in specific phases of medical record systems and become acquainted with the required medical record procedures of a local hospital. Several reports prepared by students relating to the experience are required. 16 hours per week. 2 hospital working days per week (own transportation necessary). **Prerequisite:** MR6605, MR6610; must be taken concurrently with MR6612 and MR6606.

MR6622 Directed Practice II (Medical Record): A 1-semester course; 4 credit hours. Supervised practice in health information systems in extended care facilities, psychiatric facilities, ambulatory care facilities and in related health care settings. Workshop, lecture, discussion group sessions on various aspects of health information systems in these types of health care facilities. When appropriate, field trips will be arranged to area peer review organizations, medical record conferences, etc., in order to reinforce and demonstrate medical record systems in alternative health care settings. **Note:** Students must provide their own transportation. 2 days per week. **Prerequisite:** MR6614, MR6620; must be taken concurrently with MR6616.

MR6629 Medical Record Coding & Classification: A 1-semester course; 3 credit hours. Topics covered include history, format and conventions of the International Classification of Diseases (ICD9-CM). It will cover basic coding principles which allow clinical statements to be translated into code numbers. Included will be brief coverage of other coding systems that may be required or mandated in order for a facility to receive maximum reimbursement (e.g., HCPCS/CPT which is a system required for Medicaid billing of physician and other selected clinical services and for Medicare outpatient hospital services billing). The systems covered include (but are not limited to) DSM, CPT, ICDO, MOTNAC, SNOMed. 3 class hours per week. **Prerequisite:** BI5519, BI5520, MR6605, MR6606 or permission of the instructor.

MR6661 Medical Record Transcription I: A 1-semester course; 3 credit hours. Introduction to the role of the transcriptionist in health record services. It covers the operation and care of typewriting and transcribing equip-

ment; techniques of transcription; and transcribing of sample medical communications, such as basic history and physical examination, reports of specialty departments (e.g., x-ray, pathology, EKG's, etc.). Also covered, the typing of various medical forms, admission records, group hospital insurance forms, doctor's service reports, patient transfer forms, etc.; the use of medical references with cross referencing; the proper spelling and punctuation of both common and medical terms. Quality of transcription emphasized rather than quantity. 4 class hours per week. **Prerequisite:** MR6605, MR6606. Typing 45 wpm with 5 errors or less or enrollment in Medical Terminology & Transcribing certificate program.

MR6662 Medical Record Transcription II: A 1-semester course; 3 credit hours. Development of medical transcription at a productive speed with accuracy. Units of history and physical examinations, surgical reports, and discharge summaries covering the areas of cardiology, obstetrics-gynecology, orthopedics, respiratory, gastroenterology, plastic surgery, urology, neurology, psychiatry, otorhinolaryngology, ophthalmology, and endocrinology-oncology. Rate of production is measured. Also, medical timed writings given and a review of English grammar, usage and style. 4 class hours per week. **Prerequisite:** MR6661.

Mental Health

MH2111 Introduction to Mental Health: A 1-semester course; 3 credit hours. An introduction to the history of psychiatry; current trends in mental health, drug abuse and mental retardation; the mental health team; prevention of mental illness; and the role of the human service paraprofessional. Consideration will be given to the diagnostic evaluation, establishing contact with patients and families and techniques of interviewing. 3 class hours per week.

MH2133 Observation & Recording of Human Service/Mental Health Programs: A 1-semester course; 1 credit hour. A preliminary investigation of programs in

mental health, in varied institutional settings. Defined areas of mental health, drug abuse, mental retardation and human services will be observed and recorded. These observations will be discussed in seminars held throughout the semester. 4 practicum hours per week. **Prerequisite:** Enrollment in Mental Health Technology, Community Residence Manager or Alcohol/Drug Abuse Counseling program.

MH2134 Mental Health Practicum I: A 1-semester course; 4 credit hours. A rotating practicum in selected community psychiatric and mental retardation facilities, social agencies, human service facilities and school settings. Under supervision, students will give direct care services to patients/clients individually or in groups and have opportunity to follow up patients/clients in the home and community. 12 practicum hours and 1 class hour per week. **Prerequisite:** Enrollment in Mental Health Technology program.

MH2143 Mental Health Practicum II: A 1-semester course; 4 credit hours. A continuation of Practicum I but with a greater involvement in patient care and services. 12 practicum hours and 1 class hour per week. **Prerequisite:** Enrollment in Mental Health Technology program.

MH2144 Mental Health Practicum III: A 1-semester course; 4 credit hours. A continuation of Practicum II with more intensive involvement in mental health/human service facilities. 12 practicum hours and 1 class hour per week. **Prerequisite:** Enrollment in Mental Health Technology program.

MH2145 Mental Health Practicum in Residential Services I: A 1-semester course; 4 credit hours. A practicum in selected community residences for the mentally ill, emotionally disturbed and mentally retarded. Under supervision, students will give direct services to residents individually or in groups and assist residents in money management, house management and household maintenance. 1 class hour and 12 practicum hours per week. **Prerequisite:** Enrollment in Mental Health Technology or Community Residence Manager program.

MH2146 Mental Health Practicum in Residential Services II: A 1-semester course;

4 credit hours. A continuation of Practicum I but with a greater involvement in activities of a community residence manager. 1 class hour and 12 practicum hours per week.

Prerequisite: Enrollment in Mental Health Technology or Community Residence Manager program.

MH2147 Group Dynamics: A 1-semester course; 3 credit hours. Course aims to help students realize their potential for growth more fully, and increase their ability to work effectively with others in a variety of situations. Students will learn how groups work and how individuals function within groups by forming a group for this purpose. Phases of group development, communication and group performance are experienced and discussed. 3 class hours per week.

Prerequisite: Enrollment in Mental Health Technology, Community Residence Manager or Alcohol/Drug Abuse Counseling program.

MH2155 Modalities of Treatment: A 1-semester course; 3 credit hours. The management of special problems with adults and children will become the central focus of this course. The course will explore various systems of personality and the application of these systems to practice; individual therapy; group therapy; family therapy. Special emphasis will be given to the role of the human service middle-level professional in treatment. 3 class hours per week.

MH2156 Behavior Management Principles & Techniques: A 1-semester course; 3 credit hours. This course seeks to acquaint students with the application of principles of instrumental learning theory to the problems of human behavior. Focus will be on an approach to patient management problems and practical techniques for helping patients improve functioning in the community. Content will include the analysis of behavior, reinforcement of behavior, point or token system, shaping process, ethical issues and future trends in behavior therapy. 3 class hours per week. **Prerequisite:** Enrollment in Mental Health Technology Program or Community Residence Manager program.

MH2166 Seminar in Mental Health: A 1-semester course; 3 credit hours. This seminar

course allows for group discussion of theoretical and practical approaches to patient-client care. Analysis of practicum experiences; preparation for service in various agencies; and graduate's identity as a mental health middle-level professional. 3 class hours per week. **Prerequisite:** Enrollment in Mental Health Technology, Community Residence Manager or Alcohol/Drug Abuse Counseling program.

MH2168 Mental Health Practicum I in Alcohol/Drug Abuse Services: A 1-semester course; 4 credit hours. A practicum in selected alcohol/drug abuse agencies, hospitals detoxification centers, outpatient clinics, and special programs which provide care and services for alcohol/drug abusers. Under supervision, students will give services to clients individually or in groups and have the opportunity to follow up clients in the community. 12 practicum hours and 1 class hour per week. **Prerequisite:** Enrollment in Mental Health Technology: Alcohol/Drug Abuse Counseling program.

MH2169 Mental Health Practicum II in Alcohol/Drug Abuse Services: A 1-semester course; 4 credit hours. A continuation of Practicum I but with greater involvement in client care and services. 12 practicum hours and 1 class hour per week. **Prerequisite:** Enrollment in Mental Health Technology or Alcohol/Drug Abuse Counseling program.

MH2170 Alcohol and Drug Abuse: A 1-semester course; 3 credit hours. This course is designed to generate an understanding of alcohol use, drug use and misuse, addiction and personal and social consequences. There will be discussion of community approaches to drug abuse, state and federal legislation, etiology, symptomology and current treatment modalities. The primary goal of this course is to provide future and/or present personnel in the field with basic information needed to provide services to this type of client and family. 3 class hours per week.

MH2171 Counseling Techniques with Drug Abusers: A 1-semester course; 3 credit hours. This course will focus on helping the participants develop approaches and intervention strategies for helping people with alcohol/

drug abuse problems. Special treatment philosophies, settings, systems and methods will be explored and discussed. Emphasis will be placed on helping human service counselors deal with alcohol/drug related issues in the context of their general counseling approach. Some background information concerning the physiological effects of alcohol in the body will be presented. 3 class hours per week. **Prerequisite:** Enrollment in Mental Health Technology: Alcohol/Drug Abuse Counseling program.

Music

MU7080 Piano I: A 1-semester course; 3 credit hours. This course is designed to provide students with a strong background in playing the piano. Students will receive training in such areas as technique, intervals, ear training, rhythm, fingering, basic harmony, performance, and ensemble playing. The course will introduce students to effective practice methods. They will also be introduced to piano literature in its historical perspective. Open to beginners or to those who want to improve on skills already acquired. 2 class hours and 2 lab hours per week.

MU7090 Music Reading, Notation and Ear Training: A 1-semester course; 3 credit hours. Music reading is introduced through the practical experiences of tapping, singing and playing. Notation includes study of rock, folk, jazz and classical. Ear training is accomplished by analytical listening to all major styles of music. The recognition of clefs, pitches, intervals, scales, chords, rhythms and metric patterns is thus developed. 3 class hours per week.

MU7091 Introduction to Music: A 1-semester course; 3 credit hours. Music of European, American and non-Western cultures from classical to rock will be studied. Exposure to various styles and forms of music, expansion of listening perception and knowledge of the materials and sociological aspects of music. 3 class hours per week.

MU7092 History of Jazz: A 1-semester course; 3 credit hours. A study of jazz – its definition, musical elements, history, performers, composers, styles and forms.

Emphasis will be on understanding, appreciation and enjoyment of jazz through listening, explanation and insight into its cultural background. 3 class hours per week.

MU7093 Twentieth Century Music: A 1-semester course; 3 credit hours. Trends in contemporary music beginning with Debussy and including electronic and other avant garde music, music for theatre and film, and related social and political trends of this century. 3 class hours per week. **Prerequisite:** MU7091 recommended.

MU7097 Performance Ensemble I: A 1-semester course; 3 credit hours. Ensembles of all sizes in rock, folk, jazz and classical music organized for the purpose of gaining experience in preparing and performing music before audiences. Video tape and reel-to-reel recordings of class performances are made for study purposes. Students enrolling must be capable of performing on a musical instrument or as a singer. 1 class and 3 lab hours per week.

MU7098 Performance Ensemble II: A 1-semester course; 3 credit hours. A continuation of MU7097 Performance Ensemble I with the requirement of further progress and musical development. 1 class and 4 lab hours per week. **Prerequisite:** MU7097.

MU7100 Harmony I: A 1-semester course; 3 credit hours. An intensive study of key signature, modes, intervals and triads leading to the basic principles involved in part writing, as exemplified by the music of the Common Practice period. Systematic investigation of the problems involving the use of dissonance (non-harmonic tones) within a basic four-part format. Correlated outside work. 3 class hours per week. **Prerequisite:** MU7090, or the ability to read music and knowledge of the major scales.

MU7110 Chorus I: A 1-semester course; 3 credit hours. The Northern Essex Community College Chorus performs, in concert, music from pop to classical. Experience in singing, vocal-part learning and performance is developed. No prior singing experience necessary. Four class hours (2 hours sectional and 2 hours chorus rehearsal) per week.

MU7111 Chorus II: A 1-semester course; 3 credit hours. The Northern Essex Community College Chorus performs, in concert, music from pop to classical. Experience in singing, vocal-part learning and performance is developed. Auditions will take place for voice placement. 4 hours (2 hours sectional and 2 hours chorus rehearsal) per week.

Prerequisite: Chorus I, MU7110. It is recommended that students take MU7090 Music Reading, Notation and Ear Training in conjunction with Chorus II.

Nursing

NS6600 Concepts of Role Transition for Nursing Practice: A 1-week course; 1 credit hour. This course is a prerequisite for students in the Registered Nursing Program, who are in the process of completing the Credit for Life Learning process. This course must be completed before enrolling in NS6604 Nursing II. This course is designed to facilitate the successful transition from the role of a Licensed Practical Nurse to that of a Registered Nurse. Emphasis is placed on role transition, change theory, values clarification, nursing process, and ethical and legal considerations for the practice of Registered Nursing. This course will also assist transfer students in integrating the college's objectives and philosophy, as well as the objectives and conceptual framework of the Registered Nursing Program. 15 class hours.

NS6603 Nursing I: A 1-semester course; 8 credit hours. This course is designed to introduce the student to the role of the Associate Degree Nurse. The student learns the holistic approach to meeting the basic nursing needs of clients of all ages with common health problems in structured health care settings. Basic nursing skills are learned in the Health Education Support Center where competency is evaluated. This course introduces the nursing process and affords students the opportunity to apply it in the clinical setting. Other topics include the health-illness continuum, communication skills, nutrition, pharmacology, sterile technique, and the perioperative cycle. **Day Option Hours:** Class meets 4 hours a week

per semester. Clinical meets 10 hours a week per semester. Health Education Support Center meets 2 hours a week per semester.

Evening Option Hours: Class meets 2 hours a week per semester. Clinical meet 12 hours every other week per semester. Health Education Support Center meets 1 hour a week per semester. **Prerequisite:** See appropriate curriculum for proper sequencing of courses.

NS6604 Nursing II: A 1-semester course; 8 credit hours. This course is designed to teach the student to apply the holistic approach to the care of clients with problems of nutrition, elimination, mobility, regulation and psychosocial adaptation. The student will utilize the nursing process in a variety of structured settings to promote the health status of clients/families of all ages with selected physical and psychosocial problems. Emphasis is placed on the integration of pharmacotherapeutics and teaching/learning principles to plan comprehensive nursing care for clients with common health problems. **Day Option Hours:** Class meets 4 hours a week per semester. Clinical meets 11 hours a week per semester. Health Education Support Center meets 1 hour a week per semester. **Evening Option Hours:** Class meets 4 hours a week (plus two 6-hour class days the first week) for 13-week Summer Session. Clinical meets 13 hours a week for 13-week Summer Session. Health Education Support Center meets 1 hour a week for 13-week Summer Session. **12-Month Option Hours:** Class meets 4 hours a week (plus two 6-hour class days the first week) for 13-week Summer Session. Clinical meets 13 hours a week for 13-week Summer Session. Health Education Support Center meets 1 hour a week for 13-week Summer Session. **Note:** On successful completion of NS6604 Nursing II, 12-Month Option students are integrated into Day Option NS6653 Nursing III and NS6654 Nursing IV. **Prerequisite:** See appropriate curriculum for proper sequencing of courses.

NS6653 Nursing III: A 1-semester course; 8 credit hours. This course emphasizes a holistic approach in the care of the child-bearing family, clients with oxygen alterations, circulatory alterations and maladaptive

behavior. The student will learn how to individualize the nursing process to promote an optimal level of wellness for clients and their families throughout the life cycle.. **Day Option Hours:** Class meets 4 hours a week per semester. Clinical meets 12 hours a week per semester. **Evening Option Hours:** Class meets 2 hours a week per semester. Clinical meets 12 hours every other week per semester. **Prerequisite:** See appropriate curriculum for proper sequencing of courses.

NS6654 Nursing IV: A 1-semester course; 10 credit hours. This course emphasizes holism in the care of clients with acute oxygenation, sensorineural, acute regulation and acute mobility problems. Application of crisis intervention theory is emphasized in the care of individuals and families at high-risk for abuse, addiction and other maladaptive behaviors. The student utilizes the nursing process to promote the maximum health potential of critically ill clients and their families. Management skills necessary for the care of individuals or groups of clients with complex health problems are included. **Day Option Hours:** Class meets 5 hours a week per semester. Clinical meets 15 hours a week per semester. **Evening Option Hours:** First half of course - 5 credits: Class meets 4 hours a week for 10-week Summer Session. Clinical meets 11-1/2 hours a week for 10-week Summer Session. Second half of course - 5 credits: Class meets 2-1/2 hours a week in the Fall semester. Clinical meets 15 hours every other week in the Fall semester. **Prerequisite:** See appropriate curriculum for proper sequencing of courses.

Office Administration

SL6660 General Office Procedures: A 1-semester course; 3 credit hours. Students will be involved in a simulated office environment to enhance basic entry-level skills of typing, filing, recording, computing, and retrieving information. Concentration is also placed upon human relations, personality development, and how to improve work habits and procedures. In-depth emphasis will be placed upon better understanding of the attitudes of others and will develop judgment in handling

office situations. Such knowledge will provide the student with a basis for advancement to higher positions. 3 class hours per week. **Prerequisite:** TW6621 or TW6622.

SL6661 Office Administration I: A 1-semester course; 3 credit hours. Required of all students in the Office and Business Education Department. Theory and problems in records management as a vital administrative support service, word processing from the viewpoint of copying and duplicating, written communications, and transmittal services. Concentration is placed upon the approach to job satisfaction through the systematic analysis of employment selection and the intensive concentration on the development of those traits and attitudes required of the highly trained professional. 3 class hours per week.

SL6665 Essentials of Office Management: A 1-semester course; 3 credit hours. Development of judgments and insights needed by the executive secretary to function on the administrative or supervisory level. Analysis of long-range office projects, determination of work priorities, organization of research information, and the place of human relations in the supervisory process. A case study approach to the problems of office supervision. 3 class hours per week.

SL6670 Workshop in Secretarial & Office Skills: A 1-semester course; 3 credit hours. An opportunity to review, refine and improve skills in a variety of office machines, business procedures and records management. The workshop is designed to meet the needs of persons who are now working and who are interested in reinforcing and improving existing skills, and also of persons who wish to return to the field of office work. 2 class hours and 2 lab hours per week.

SL6673 Word Processing I: A 1-semester course; 3 credit hours. An introductory course in the operation of visual display word processors. The course will include introduction to computer terminals and adaptation to word processing, creation of documents, document names, spacing, text creations, text editing, and printing. 3 class hours per week. **Prerequisite:** Skill in the operation of a typewriter and formatting; TW6622 or equivalent.

SL6674 Word Processing II: A 1-semester course; 3 credit hours. This course is designed to simulate the position of a correspondence secretary in a word processing center. The simulation incorporates input from handwritten copy and rough draft, and includes letters, memos, reports, stored paragraphs, stored documents with variables, and miscellaneous items. The simulation can be completed on a self-paced basis with supervision. The instructor as supervisor may also vary the flow of work in the "center." 3 class hours per week. **Prerequisite:** Word Processing I.

SL6680 Medical Office Administration: A 1-semester course; 3 credit hours. Theory and problems in the management of the medical office including filing, making appointments, completing medical forms, telephone techniques, medical bookkeeping, and dictation and transcription procedures related to the medical office. 3 class hours per week. **Prerequisite:** TW6622 and MR6605.

SL6682 Managerial Communications: A 1-semester course; 3 credit hours. Development and refinement of communication skills necessary for satisfactory job performance in business, particularly on the managerial and administrative levels. The course emphasizes various types of business letter writing, reports, memoranda, and business and legal forms common to the operation of the modern business office. The preparation of business documents will be coordinated with the concepts of electronic word processing/information management. 3 class hours per week.

Office Techniques

SK6653 Machine Transcription: A 1-semester course; 3 credit hours. Development of high-level skills in the use of transcription equipment. Emphasis is placed on the use of business, professional, and technical materials. Development of vocational transcription rates. 4 class hours per week. **Prerequisite:** TW6622.

Philosophy

PH0001 Early & Medieval Philosophy: A 1-semester course; 3 credit hours. An adventure in the history of ideas. A study of the rise and evolution of philosophy from the early Greeks to the Renaissance. Emphasis on Plato, Aristotle, Augustine and Aquinas. 3 class hours per week.

PH0002 Modern Philosophy: A 1-semester course; 3 credit hours. A further adventure in the history of ideas. A study of the progress of philosophy from the Renaissance to the twentieth century. Special emphasis on Descartes, Locke, Hegel, Nietzsche, Marx and Sartre. 3 class hours per week.

PH0201 Bioethics: A 1-semester course; 3 credit hours. An examination of the interrelationships between philosophy and problems arising from advances in modern biology, including the ethical implications of the problems of population control, resource allocation and biomedicine. This is a discussion course for those students who enjoy dealing with ideas. There are no prerequisites, but a general background in the sciences or philosophy may make the ideas presented in the course more meaningful. This course might not be transferable as a science requirement. 3 class hours per week.

PH1101 Introduction to Philosophy: A 1-semester course; 3 credit hours. The aims, nature and problems of philosophy, with emphasis upon theory of knowledge, metaphysics, ethics and philosophy of religion. 3 class hours per week.

PH1102 Problems of Philosophy: A 1-semester course; 3 credit hours. A critical analysis of the philosophic issues concerning the nature of man, freedom and determinism, esthetics, social and political philosophy and philosophy of history.

Note: Not a sequential course. 3 class hours per week.

PH1141 Ethics: A 1-semester course; 3 credit hours. A study of representative ethical systems and how they deal with moral issues. Attention will be given to the meanings of basic terms and to the application of ethics to major personal and social problems of our

times such as those in law, medicine, international issues, sexuality and lifestyle. 3 class hours per week.

PH1150 Practical Logic: A 1-semester course; 3 credit hours. This course is designed to introduce the student to the basics of reasoning, argumentation, and critical thinking. Included are criteria of sound reasoning, rational assessment of arguments, common fallacies, and basic informal logic. 3 class hours per week.

PH1151 Introduction to Logic: A 1-semester course; 3 credit hours. Course will inquire into the nature of critical thinking. Such topics as the functions of language, experimental truth and logical validity, the structure of deductive arguments, and the basic inductive methods will be considered. 3 class hours per week.

Physical/Outdoor Education & Leisure Studies

PE1008 Canoeing: A 1/2-semester course; 1 credit hour. The course follows the American Red Cross Small Craft certificate program for canoeing. Some of the skills include: paddling strokes, canoe rescue, artificial respiration and a trip. Students successfully completing the course will receive the American Red Cross Canoeing Certificate. All canoeing equipment is provided. 3 class hours per week.

PE1011 Fly Fishing & Fly Tying: A 1-semester course; 2 credit hours. Cost, selection and care of various types of fishing equipment. Fundamental skills and techniques. Students will be taken off campus for practical application of skills acquired. 3 class hours per week.

PE1014 Golf: A 1/2-semester course; 1 credit hour. The fundamentals of golf; grip, stance, rules, swing and etiquette. Practice will be given with long and short irons, drives and putters. 3 class hours per week.

PE1015 Golf Intermediate: A 1/2-semester course; 1 credit hours. Designed for students seeking further skill and knowledge beyond the beginning level. The majority of instruction will be held on the golf course. 3 class hours per week.

PE1018 Modern Dance I: A 1/2-semester course; 1 credit hour. A study of the fundamentals of modern dance techniques. Emphasis is on cultivating a sound basic technique as well as self-expression through movement. 3 class hours per week.

PE1031 Weight Training: A 1/2-semester course; 1 credit hour. Basic principles and skills of weight training. Emphasis on cardiovascular and flexibility activities. 3 class hours per week.

PE1038 Cross-Country Skiing: A 1/2-semester course; 1 credit hour. This course will include the skills necessary for skiing uphill, downhill, striding on flat terrain, poling and different types of skiing equipment. Class time will be spent outdoors skiing and practicing skills. All skiing equipment is provided. 3 class hours per week.

PE1041 Yoga: A 1-semester course; 2 credit hours. This is a course in self-realization covering Hatha exercises and breathing, nutrition, relaxing, concentration and Eastern philosophy. Classes will consist of practice and discussion aimed at improving life through the wisdom of this timeless discipline. 3 class hours per week.

PE1042 Jogging: A 1/2-semester course; 1 credit hour. This course will elaborate on one of the most simple but effective forms of conditioning. Class time will cover how to warm up, train and pace yourself so as to enjoy the pleasant overall exhilaration this activity promotes. 3 class hours per week.

PE1049 Modern Dance II: A 1/2-semester course; 1 credit hour. Utilizing basic dance skills from Modern Dance I, the student learns advanced techniques and skills to attain proficiency. While the emphasis is on sound technique, time is also reserved for creative activity. 3 class hours per week.

PE1050 Racquetball: A 1/2-semester course; 1 credit hour. An introductory course to racquetball. Includes the basic strokes, footwork, rules, regulations and strategy. All classes are held at Cedardale Racquetball facility in Haverhill, MA. 3 class hours per week.

PE1056 Cardiopulmonary Resuscitation (C.P.R.) and the Cardiovascular System: A 15-hour course; 1 credit hour. This course covers the physiology of the cardiovascular system; the prevention, symptoms and treatment of heart attack; as well as practice in one and two-rescuer C.P.R., infant C.P.R., and procedures for obstructed airway. Satisfactory completion of the American Heart Association Exam and practical tests will qualify the student to receive a card certifying him or her in basic life support. 3 class hours per week.

PE1057 Ballet I: A 1-semester course; 1 credit hour. This is a beginning course which will give the student a basic foundation in classical ballet. Major emphasis will be on the five positions of feet and arms and the eight body positions. Basic technique will be covered with emphasis on barre work and some center work. Basic appreciation of this art form will also be highlighted. 1-1/2 class hours per week.

PE1058 Ballet II: A 1-semester course; 1 credit hour. This course will review basic ballet techniques and progress to refinement of technique through more advanced barre work, center work, and across-the-floor combinations. 1-1/2 class hours per week.
Prerequisite: PE1057 Ballet I.

PE1059 Ballet III: A 1/2-semester course; 1 credit hour. Training in advanced skills of ballet technique. The course will focus on the teaching of movements and combinations of movements within the classical ballet vocabulary designed to develop strength, endurance, speed and flexibility. 3 class hours per week. **Prerequisite:** PE1058 Ballet II.

PE1060 Ballet IV: A 1/2-semester course; 1 credit hour. Training in advanced skills of ballet technique. The course will focus on the teaching of movements and combinations of movements within the classical ballet vocabulary designed to develop strength, endurance, speed and flexibility. 3 class hours per week. **Prerequisite:** Ballet I, II and III.

PE1061 Modern Dance III: A 1/2-semester course; 1 credit hour. Building on basic dance skills developed in Modern Dance I and II, the student will progress to more advanced technique, with more emphasis on locomotor

activities, 3 class hours per week.

Prerequisite: Modern Dance I and II.

PE1062 Modern Dance IV: A 1/2-semester course; 1 credit hour. Building on basic dance skills developed in Modern Dance I, II and III, the student will progress to more advanced technique with work on more complex combinations and use of space. 3 class hours per week. **Prerequisite:** Modern Dance I, II, III.

PE1063 Jazz I: A 1/2-semester course; 1 credit hour. Basic training in a variety of jazz styles. The student will develop specialized technique through the barre and basic jazz movements which will be the focus of this course. The barre will be Horton, Luigi and Giordano-based. 3 class hours per week.

PE1064 Jazz II: A 1/2-semester course; 1 credit hour. This course will build on basic jazz terminology covered in Jazz I and progress to more advanced barre and combinations. 3 class hours per week.

Prerequisite: Jazz I.

PE2001 Introduction to Physical Education: A 1-semester course; 3 credit hours. A career-oriented course designed to introduce new students to the profession of physical education, and to make them aware of career alternatives within the field of physical education and to familiarize them with the requirements and professional preparation. 3 class hours per week.

PE2007 Camp Counseling & Environment Interpretation. A 1-semester course; 3 credit hours. An introductory course in camp counseling and environment interpretation designed to give the prospective camp counselor a background and insight into the workings of camp life and an understanding of the youths he/she will be working with and a knowledge of the resources available. There will be opportunities for practical application of camping skills as well as experiences in out-of-doors activities such as cookouts, field trips and outdoor camp activities. 3 class hours per week.

PE2012 First Aid & Safety: A 1-semester course; 3 credit hours. This course prepares the student to deal with most types of medical emergencies. Classes include simulated

disaster, ambulance tour, practical skills, knowledge of the Advanced Red Cross First Aid book. When requirements are met, a standard first aid card is earned from the American Red Cross. 3 class hours per week.

PE2016 Foundations of Health & Fitness: A 1-semester course; 2 credit hours. This course is designed as an individualized health improvement and maintenance program. The course will focus on individual health and fitness profiles, graded and controlled exercise, and monitoring and recording of certain body functions. The objective of the course is to merge exercise, nutrition and stress management into one course and help change a person's life style for a better quality of life. 2 class hours per week.

PE2292 Stress Reduction & Relaxation Techniques: A 1-semester course; 2 credit hours. This course emphasizes the relationship between the mind and body in stress reduction. Students will participate in exercises which demonstrate the use of meditation techniques, techniques of breathing, progressive relaxation, self-hypnosis, aerobics and assertiveness training. Body reaction to stress, coping skills, the use of imagination and how to manage time will be explored in class. This course is designed for students in the Health or Human Services career fields, but would also benefit the general college population. 2 class hours per week.

PE2295 Aerobics: A 1-semester course; 2 credit hours. An exercise and activity class emphasizing weight control through individualized diet, increased muscle tone and total body well-being. Participation will include small group discussion and progress will be charted. 2 class hours per week.

Physics

PI5503 Introductory Physics: A 1-semester course; 4 credit hours. This course is intended for non-science majors. It is designed to cover concepts in physics which are necessary for a basic understanding of our twentieth century physical world. The treatment will be largely non-mathematical and will cover topics such as motion, energy, gravitation, and the

structure of matter. 3 class hours and 2 lab hours per week.

PI5504 Introductory Physics II: A 1-semester course; 4 credit hours. A continuation of PI5503 with the same objectives, but focuses upon other interesting topics such as heat, light, radiation and relativity. 3 class hours and 2 lab hours per week. **Prerequisite:** PI5503

PI5621 Applied Physics I: A 1-semester course; 4 credit hours. The principles of mechanics including concurrent forces, nonconcurrent forces, friction, elasticity, motion, forces and motion, work and energy, power, impulse and momentum, simple harmonic motions. A non-calculus approach. 3 class hours and 3 lab hours per week. **Prerequisite:** MA5621 or equivalent.

PI5622 Applied Physics II: A 1-semester course; 4 credit hours. Fluid mechanics, heat, sound, light including the following topics: Archimedes principles, Bernoulli's equation, the laws of thermodynamics, properties of gases, heat transfer, wave motion reflection, refraction, lenses. A non-calculus approach. 3 class hours and 3 lab hours per week. **Prerequisite:** PI5621 and MA5621 or equivalent.

PI5623 Engineering Physics I: A 1-semester course; 4 credit hours. To be taken concurrently with MA5692. The principles of mechanics, including composition and resolution of vectors, statics, moments, rectilinear motion, Newton's second law, motion of a projectile, work and energy, impulse and momentum, circular motion, rotational kinematics and dynamics, elasticity, harmonic motion. 3 class hours and 3 lab hours per week. **Prerequisite:** MA5690 or equivalent.

PI5624 Engineering Physics II: A 1-semester course; 4 credit hours. To be taken concurrently with MA5693. Heat, sound and optics, including the following: thermometry, quantity of heat, change of state, work and heat; heat transfer, thermal properties of matter, the first and second law of thermodynamics, wave motion, vibrating systems; acoustical phenomena; the nature and propagation of light; reflection and refraction

at a single surface, lenses and lens aberration; optical instruments; illumination, color, and polarized light. 3 class hours and 3 lab hours per week. **Prerequisite:** PI5623 and MA5692.

PI5651 Engineering Physics III: A 1-semester course; 4 credit hours. Principles of electricity and magnetism, Coulomb's Law, potential, D.C. Circuits, the magnetic field of a current and of a moving charge, induced electromotive force, capacitance and inductance, magnetic properties of matter. 3 class hours and 3 lab hours per week. **Prerequisite:** PI5623, PI5624 and MA5693 (MA5693 may be taken concurrently).

PI6511 Radiologic Science I: A 1-semester course; 3 credit hours. Designed to examine the fundamentals of physical principles of electrical and x-ray physics and the operational study of x-ray equipment and auxiliary devices. The course will examine fundamental and derived units, mechanics, matter, magnetism and electricity, electromagnetism, generators, motors and transformers. 3 class hours per week. **Prerequisite:** Enrollment in Radiologic Technology program or permission of instructor.

PI6512 Radiologic Science II: A 1-semester course; 3 credit hours. Emphasis will be placed on the formation of ionizing radiation by further analysis of x-ray and other types of circuits, tubes, etc., laws of motion, thermal considerations, optics and lens systems and radioactivity. 3 class hours per week. **Prerequisite:** Enrollment in Radiologic Technology Program or permission of the instructor.

Practical Nursing

PN0101 Practical Nursing: A 1-semester course; 10 credit hours. This course focuses on the fundamental skills and principles of administering basic nursing care to patients in geriatric clinical settings. Emphasis is placed on developing assessment skills needed to recognize and meet basic nursing needs; providing a safe comfortable physical environment; meeting the personal care needs common to all clients in simple nursing situations. Introduction to general surgical

care, drug administration, proper communication techniques, and legal and ethical aspects of nursing care are included. The clinical component is correlated with the didactic, utilizing non-acute community settings. 8 class hours and 13 clinical hours per week. **Prerequisite:** Acceptance into the Practical Nursing Program.

PN0201 Practical Nursing II: A 1-semester course; 10 credit hours. This course introduces the student to the role of the practical nurse in the health care delivery to patients in all stages of growth and development, focusing on common medical surgical problems and the related pharmacologic and nutritional protocols in the therapeutic/restorative plan of care. In each unit the unique aspects of the pediatric, adult and geriatric client will be identified. The clinical component, utilizing adult and geriatric medical-surgical and pediatric units, is designed to correlate the didactic with the nursing care practice. 7 class hours and 15 clinical hours per week. **Prerequisite:** Completion of Practical Nursing I with a grade of C or better; PS6551 Adulthood and Aging and SC5503 Integrated Science I.

PN0301 Practical Nursing III: A 10-week course; 8 credit hours. This course provides the basic nursing skills necessary for an entry level Graduate Practical Nurse position. Proceeding from simple to complex, normal to abnormal, family-centered nursing care concepts and skills are developed in the obstetrical clinical settings. In various medical-surgical clinical settings, emphasis is placed on developing self-initiative and graduate-level skills and responsibilities. Included is further development of the nursing process as it is reflected in all aspects of health care and the nursing implications of the administration of common medications. 7-1/2 class hours and 21 clinical hours per week.

Prerequisite: Completion of Practical Nursing II with a grade of C or better; SC5504 Integrated Science II and PS1205 Human Growth & Development Through Adolescence.

PN0310 Vocational Trends in Practical Nursing: A 10-week course; 1 credit hours. This course explores the social, ethical and

professional issues that affect nursing and influence nursing practices. A historical overview of nursing and practical nursing is presented; however, emphasis is placed on current trends in nursing education and practice and their impact on the practical nurse. 1 1/2 class hours per week.

Printed Circuit Technology

PC1001 Printed Circuit Technology

Survey: A 1-semester course; 3 credit hours. This course is designed as an overview of the processes involved in the manufacturing of double and multilayer printed circuit boards, from the order package to final fabrication. Materials, equipment, process controls, and product acceptability will be discussed for each stage of fabrication. 3 class hours per week.

PC1010 Introduction to Quality Assurance:

A 1-semester course; 3 credit hours. This course is designed to familiarize the participant with the function and operation of a quality assurance department in relation to company policy and objectives. Topics include quality control, statistical methods, quality charts, process control, and sampling techniques. Special emphasis will be placed on the quality system and the economics of quality. This course will cover the best of leading theorist (Crosby, Deming and Juan) as well as Japanese quality philosophy and techniques. 3 class hours per week.

Prerequisite: Basic Mathematics competency.

PC1030 Image Transfer Processes for PC

Manufacturing: A 1-semester course; 4 credit hours. This course is designed as an in-depth study of all processes involved in the artwork generation, dry film and screen printing methods commonly used in the manufacturing of PC boards. For each process involved, the following topic areas will be covered: operation principles, production process controls, equipment and maintenance, and handling. 4 class hours per week.

Prerequisite: Printed Circuit Technology Survey.

PC1031 Mechanical Processes for PC

Manufacturing: A 1-semester course; 3

credit hours. This course covers the mechanical processes involved in the manufacturing of printed circuit boards, with a special emphasis on multilayer and flexible technologies. The topics include material preparation, tooling systems, lamination, drilling and profiling. 3 class hours per week. **Prerequisite:** Printed Circuit Technology Survey.

PC1040 Plating Methods and Materials I:

A 1-semester course; 3 credit hours. This course is an overview of basic plating processing including preplate and prepaint mass finishing; cleaning and pickling; zinc, cadmium, cyanide, copper, nickel and bright acid sulfate copper plating; chromate conversion coatings; and Hull Cell Tests. Safety, quality and housekeeping considerations will be a component of all topics. 3 class hours per week.

Psychology

PS1101 Introduction to Psychology: A 1-semester course; 3 credit hours. A survey course covering major topics and theorists in the field. The social, emotional, motivational, sensory and cognitive realms of behavior will be studied with a primary emphasis on normal developmental trends and patterns. Theorists considered may include Maslow, Freud, Piaget, Erikson and Skinner among others. 3 class hours per week.

PS1151 Child Psychology: A 1-semester course; 3 credit hours. The process of development, beginning in the prenatal period to adolescence will be explored through the perspective of the relative contributions of environment and heredity. An overview of cognitive, linguistic, perceptual, motor, social and personality development during infancy, the preschool years and middle childhood will be presented. Several major theories of development will be considered. 3 class hours per week. **Prerequisite:** Introduction to Psychology or permission of the instructor.

PS1152 Adolescent Psychology: A 1-semester course; 3 credit hours. A study of adolescent development from the point of view of both the adolescent and the adult. Basic theories of development will be examined with an emphasis on social,

emotional, physical and cognitive domains. Communication and problem solving techniques appropriate to this stage will be considered in general and with reference to specific potential conflicts. May not be offered every semester. 3 class hours per week.

PS1154 Psychology of Personality: A 1-semester course; 3 credit hours. This course introduces students to a variety of theoretical approaches to the understanding of character and personality. It includes psychoanalytic, learning, humanistic, transpersonal and existential theories. May not be offered every semester. 3 class hours per week.

PS1203 Developmental Psychology: A 1-semester course; 3 credit hours. This course is a developmental life span course which will explore some of the basic theories, principles and ideas concerning human development from prenatal development to old age. Examination will include a discussion of those processes and factors that contribute to and affect the biological, cognitive, social, psychological, and transpersonal growth of humans through the entire life span. The theories of Freud, Piaget, Maslow, Erikson and Kohlberg will be discussed. 3 class hours per week. **Prerequisite:** Introduction to Psychology or permission of instructor.

PS1205 Human Growth and Development Through Adolescence: A 1-semester course; three credit hours. This course is designed to help students understand behavior from conception to adolescence. Specific problems which occur during the life cycle will be discussed and explored. Patterns and sequences of growth and individual differences are reviewed in relation to the effects of heredity and environmental factors. 3 class hours per week.

PS1351 Social Psychology: A 1-semester course; 3 credit hours. A discussion of the fact that human nature is social and the implications of that fact: principally the effect of others upon one's mind and selfimagery, and the complex social coordination that it allows. Special attention to individuation, the social validation of meaning and perception, symbols and symbolic interaction. 3 class

hours per week. **Prerequisite:** Introduction to Psychology or Introduction to Sociology.

PS1354 Human Relations: A 1-semester course; 3 credit hours. A group experience providing students with an opportunity to study and experience interpersonal relationships in a small group in which the focus is on interpersonal communication. Limit 20 students. May not be offered every semester. 3 class hours per week.

PS1355 Deafness: The Individual & Society: A 1-semester course; 3 credit hours. This course will examine deafness from a multidisciplinary and developmental perspective. It will explore the psychological and sociological variables that affect the growth and development of the deaf individual in a hearing society. This will include the function of language in society, the effect of deafness on the cognitive, social, psychological development of the deaf person and the role of the family and other institutions in the socialization of the deaf individual. It will also attempt to explore cultural and personal attitudes towards deafness of both the deaf and hearing person. 3 class hours per week. **Prerequisite:** Introduction to Psychology or permission of the instructor.

PS1651 Organizational Behavior: A 1-semester course; 3 credit hours. An introductory course in the patterns and principles of human behavior in organizations. These will include such areas as organizational structure, motivation, decision-making, managerial style, conflict and communication. A variety of organizational settings will be explored. 3 class hours per week.

PS1751 Abnormal Psychology: A 1-semester course; 3 credit hours. The study of the etiology, treatment and prevention of mental disorders. Includes the study of functional and organic psychoses, psychoneuroses and borderline maladjustments. 3 class hours per week. **Prerequisite:** Introduction to Psychology or permission of the instructor.

PS2112 Problems of Early Childhood Education: A 1-semester course; 3 credit hours. A sociological-psychological study of factors leading to educational success for the young child defined as having special needs

because of intellectual, cultural, social and emotional factors. Federal and State legislation dealing with the education of handicapped children will be introduced. This course includes the role of the family and cultural background as they relate to educational success. A theoretical framework of crisis and loss will be presented. 3 class hours per week. **Prerequisite:** Introduction to Psychology or permission of the instructor.

PS2114 Problems of the School-Aged Child: A 1-semester course; 3 credit hours. The course is designed to introduce the student to the variety of problems adults encounter with children particularly in the classroom setting. An effort will be made to 1) identify the needs and rights of children; 2) classify specific problem areas ranging from physical handicaps to cognitive, social and emotional difficulties; 3) examine and discuss methods of relating to and teaching "problem children" and 4) identify support resources available in the community to teachers and parents. A simultaneous field work assignment is recommended. 3 class hours per week. **Prerequisite:** Introduction to Psychology or permission of the instructor.

PS6551 Adulthood and Aging: A 1-semester course; 3 credit hours. This course will focus on the human life cycle from your adulthood to late life with an emphasis on the middle and later years. Transition, adaptation, and those variables which affect successful aging will be explored. Current theorists such as Erikson, Neugarten, Levenson and G.H. Mead will be discussed in an effort to conceptualize all of life as developmental. 3 class hours per week.

Radiologic Technology

RT6504 Introduction to Radiologic Technology I: A 1-semester course; 3 credit hours. This course will introduce the students to departmental administration; medical terminology; medical ethics; basic radiation protection; radiographic film, film holders, darkroom procedures; basic nursing procedures and cardiopulmonary resuscitation (CPR). The course is divided into two

separate modules. Module A consists of 40 class hours scheduled within four weeks. Module B consists of 24 hours per week of clinical practicum scheduled within four weeks. **Prerequisite:** Enrollment in the Radiologic Technology Program.

RT6515 Clinical Practicum I: A 1-semester course; 2 credit hours. A concurrent aspect of Radiologic Technology I. The student will apply under direction and supervision at the affiliate hospital principles learned in the classroom. Emphasis will be placed on solidification of theoretical knowledge in the hospital setting. Activities will be under the direction of the college and the liaison instructor at the affiliate hospital. 14 hours of directed clinical activity and 2 hours of discussion for a total of 16 hours per week. **Prerequisite:** RT6519 Radiologic Technology I.

RT6519 Radiologic Technology I: A 1-semester course; 4 credit hours. This course will offer a comprehensive and detailed study of basic principles of radiographic exposure, preliminary radiographic positioning and radiographic osteology. Emphasis will be placed on the understanding of radiologic technology and its place in the clinical affiliation. 4 class hours per week.

Prerequisite: RT6504 Introduction to Radiologic Technology I.

RT6523 Radiologic Internship: A 10-week Summer Session course; 2 credit hours. Held at the students designated hospital affiliate, this clinical internship allows the student continual practicum experience and reinforcement of materials learned to date in the field of radiology. **Prerequisite:** Completion of all freshman Radiologic Technology courses.

RT6525 Clinical Practicum II: A 1-semester course; 2 credit hours. A concurrent aspect of Radiologic Technology II. The student will apply his/her knowledge and skills learned under direction and supervision at his/her affiliate hospital. Student assignments will be under the direction of the program director and the liaison instructor at the affiliate hospital. Students are required to perform 14 hours of supervised clinical activity and 2 hours of laboratory demonstration for a total

of 16 hours per week. **Prerequisite:** RT6529 Radiologic Technology II.

RT6529 Radiologic Technology II: A 1-semester course; 4 credit hours. This course will continue basic positioning, radiographic exposure and their interrelated principles. An evaluation and study of the use of contrast media. Emphasis will be placed on Radiologic Technology and its place in the clinical affiliation. 4 class hours per week
Prerequisite: RT6619 Radiologic Technology I.

RT6531 Radiologic Technology III: A 1-semester course; 3 credit hours. This course will provide the student with an introduction to the evaluation of radiographic systems to assure consistency in the production of quality images. The components involved in the radiography system will be identified. Tests and procedures to evaluate these components will be discussed. State/federal impacts will be described. Special imaging techniques and equipment will also be discussed. 3 class hours per week. **Prerequisite:** RT6529 Radiologic Technology II.

RT6533 Advanced Radiographic Positioning: A 1-semester course; 3 credit hours. The student will study alternate methods of investigating the skeletal system for trauma and disease as they relate to Radiologic Procedures. 3 class hours per week. **Prerequisite:** RT6529 Radiologic Technology II.

RT6535 Clinical Practicum III: A 1-semester course; 3 credit hours. A concurrent aspect of Radiologic Technology III, Advanced Radiographic Positioning and Special Procedures. The student will apply under direction and supervision at the affiliate hospital material learned in the classroom. Emphasis will be placed on solidification of theoretical knowledge in the hospital setting. Activities will be under the direction of the college and the liaison instructor at the affiliate hospital. 22 hours of directed clinical activity and 2 hours of discussion for a total of 24 hours per week. **Prerequisites:** RT6533, RT6531 and RT6539 concurrently.

RT6539 Radiologic Special Procedures: A 1-semester course; 3 credit hours. The student

will study special diagnostic radiographic procedures and the special equipment involved. 3 class hours per week.

Prerequisite: RT6529 Radiologic Technology II.

RT6541 Computers in Radiography: A 1-semester course; 3 credit hours. This course will introduce the student to fundamental principles of computer technology, computer concepts and related terminology. Computerized axial tomography as a diagnostic tool will be discussed. CT equipment and its application will be investigated and basic CT examinations with related cross sectional anatomy will also be studied. 3 class hours per week. **Prerequisite:** RT6531 Radiologic Technology III.

RT6545 Clinical Practicum IV: A 1-semester course; 3 credit hours. A concurrent aspect of Computers and Radiography, Fundamental of Disease Process and Radiobiology, as well as a continual aspect of Radiologic Technology III, Special Radiographic Procedures and Special Radiographic Positioning. The student will apply under direction and supervision at the affiliate hospital material learned in the classroom. Emphasis will be placed on solidification of theoretical knowledge in the hospital setting. Activities will be under the direction of the college and the liaison instructor at the affiliate hospital. 22 hours of directed clinical activity and 2 hours of laboratory demonstration for a total of 24 hours per week. **Prerequisites:** BI5530, RT6541 and RT6549 concurrently.

RT6549 Radiobiology: A 1-semester course; 3 credit hours. The student will study the biological effects of radiation, radiation protection, radiation therapy and radioisotopes. 3 class hours per week. **Prerequisite:** RT6531 Radiologic Technology III.

Religion

RE1101 World Religions: A 1-semester course; 3 credit hours. A comparative study of the major religions of the world, including Hinduism, Buddhism, Taoism, Confucianism, Sikhism, Judaism, Christianity and Islam. 3

class hours per week.

RE1102 Contemporary Western Religion:

A 1-semester course; 3 credit hours. A study of the major current movements in theology and practice of religious life, with emphasis on American religion. Death of God, religious atheism, secular Christianity, the charismatic revival and the Jesus movement are among the themes discussed. Opportunity will be given for field work in the religious life of the Merrimack Valley. 3 class hours per week.

RE1103 Eastern Philosophies and Religions:

A 1-semester course; 3 credit hours. A survey of the major religious traditions of India, China and Japan, with emphasis on Hinduism, Buddhism, Confucianism, Taoism and Shinto. The course is aimed at an acquaintance with the ways of thinking and living, as well as the value judgment inherent in eastern culture traditions. 3 class hours per week.

RE1104 Judaism, Christianity and Islam:

A 1-semester course; 3 credit hours. A survey of the Judaic, Christian and Islamic traditions with emphasis on historical and cultural perspective. Attempts are made to assess the role of religion in the ancient, medieval and modern societies of the West and Middle East. 3 class hours per week.

Respiratory Therapy

RS6614 Introduction to Respiratory Care:

A 1-semester course; 7 credit hours. This course provides an introduction and orientation to the field of respiratory care. Major topics include cardiopulmonary anatomy and physiology, medical gas and oxygen therapy; humidity and aerosol therapy; basic patient assessment; an introduction to blood gases and acid-base balance; chest physiotherapy; and finally sterilization and infection control. Physician input will be provided through supplementary lectures from the program's medical director. The lab component covers equipment and procedural skills related to lecture material. Respiratory Practicum I is a corequisite and parallels this course giving the student clinical experience and an opportunity for the application of theoretical principles and content material presented in this course.

6 class hours, 3 lab hours per week.

Corequisite: RS6615 Respiratory Practicum I.

RS6615 Respiratory Practicum I:

A 1-semester course; 2 credit hours. This practicum in a parallel fashion, uses knowledge and skills presented in RS6614 lab and lecture, and applies them to the hospital setting. This practicum includes an orientation to the hospital and competencies in basic respiratory therapeutic procedures. Also included are CPR instruction, certification and an initial two-week preclinical orientation period. Presented at one of the program's hospital affiliates, this practicum is administered jointly by a clinical instructor and the program's clinical coordinator. 8 clinical practicum hours a week. **Corequisite:** RS6614 Introduction to Respiratory Care.

RS6624 Respiratory Procedures and Assessment:

A 1-semester course; 7 credit hours. This course presents sections in cardiopulmonary pathophysiology, pulmonary disease, basic pulmonary function testing, clinical application of blood gas analysis, and an introduction to positive pressure breathing, IPPB, mechanical ventilators, and, finally, emergency respiratory care. Physician input will be provided through supplementary lectures from the program's medical director. The lab component covers equipment and procedural skills related to lecture materials. Respiratory Practicum II is a corequisite and an opportunity for the application of theoretical principles and content material presented in this course. 6 class, 2 lab hours per week. **Corequisite:** RS6629 Respiratory Pharmacology and RS6625 Respiratory Practicum II. **Prerequisite:** RS6614 and RS6615 with a grade of C or better.

RS6625 Respiratory Practicum II:

A 1-semester course; 4 credit hours. This practicum in a parallel fashion uses knowledge and skills presented in RS6624 lecture and lab and applies them to the hospital setting. This practicum continues to build on competencies acquired during the first semester. Emphasis is placed on the day to day therapeutic respiratory procedures. Presented at one of the program's hospital affiliates, this practicum is administered jointly by a clinical instructor

and the program's clinical coordinator. 16 clinical practicum hours a week. **Corequisite:** RS6624 Respiratory Procedures and Assessment. **Prerequisite:** RS6614 and RS6615 with a grade of C or better.

RS6629 Respiratory Pharmacology: A 1-semester course; 2 credit hours. This course will present the principles of general pharmacology and action of the major respiratory drugs. In addition, the anatomy and physiology of the autonomic nervous system and its role in drug action will be covered. Drugs will be studied as groups and individually for site and mechanism of action, contraindication and side effects, clinical uses and routes of administration. 2 class hours per week. **Prerequisite:** RS6614 and RS6615.

RS6644 Ventilator Management and PFTS: A 1-semester course; 7 credit hours. This course covers areas of airway and ventilator management, advanced pulmonary function testing, an introduction to neonatal and pediatric respiratory care, cardiopulmonary rehabilitation, and analysis and decision making. Physician input will be provided through supplementary lectures from the program's medical director. The lab component covers equipment and procedural skills related to lecture material. Respiratory Practicum III is a corequisite and parallels this course giving the student clinical experience and an opportunity for the application of theoretical principles and workout material presented in this course. 6 class hours, 2 lab hours per week. **Corequisite:** RS6645 Respiratory Practicum III. **Prerequisite:** RS6624 and RS6625 with a grade of C or better.

RS6645 Respiratory Practicum III: A 1-semester course; 4 credit hours. This practicum in a parallel fashion, uses knowledge and skills presented in RS6644 lecture and lab and applies them to the hospital setting. This practicum again builds on competencies acquired during previous semesters. Emphasis is placed on airway and ventilator management and a rotation through the pulmonary function lab. Physician input is provided primarily by the program's medical director. Presented at one of the program's hospital affiliates, this practicum is administered

jointly by a clinical instructor and the program's clinical coordinator. 16 clinical practicum hours a week. **Corequisite:** RS6644 Ventilator Management & PFTS. **Prerequisite:** RS6624 and RS6625 with a grade of C or better.

RS6654 Respiratory Intensive Care: A 1-semester course; 6 credit hours. This course will provide advanced study in cardiovascular and respiratory disease, emergency respiratory care, respiratory intensive care, and finally neonatal and pediatric respiratory intensive care. There is no lab component to this course. Physician input will be provided through supplementary lectures from the program's medical director. Respiratory Practicum IV is a corequisite and parallels this course giving the student clinical experience and an opportunity for the application of theoretical principles and content material presented in this course. 6 class hours per week.

Corequisite: RS6655 Respiratory Practicum IV. **Prerequisite:** RS6644 and RS6645 with a grade of C or better.

RS6655 Respiratory Practicum IV: A 1-semester course; 4 credit hours. This practicum in a parallel fashion takes theoretical knowledge presented in RS6654 lecture and applies it to the hospital setting. This practicum builds on competencies acquired during previous semesters. Emphasis is placed on respiratory intensive care. Speciality rotations are established through a neonatal/pediatric facility and a homecare agency. Physician input is provided primarily by the program's medical director. Presented at one of the program's hospital affiliates, this practicum is administered jointly by a clinical instructor and the program's clinical coordinator. 16 clinical practicum hours per week. **Corequisite:** RS6654 Respiratory Intensive Care. **Prerequisite:** RS6644 and RS6645 with a grade of C or better.

RS6659 Respiratory Seminar: A 1-semester course; 2 credit hours. This course integrates the psychology of patient care, death and dying, interpersonal relations, the principles of management, use of computers, and other subjects related to employment in the hospital environment. Since a seminar is defined as a group of advanced students studying under a

professor, each doing original research and sharing the results of that research with each other, this course relies heavily on student participation. 2 class hours per week.

Prerequisite: RS6644 and RS6645.

Science

SC5503 Integrated Science I: A 1-semester course; 3 credit hours. This course provides an introduction to the study of the structure and function of the human body. Related topics in chemistry, physics and disease are integrated with the appropriate body systems covered. 3 class hours per week.

SC5504 Integrated Science II: A 1-semester course; 3 credit hours. A continuation of SC5503 covering the body systems not studied in SC5503. Related topics in chemistry, physics and disease are integrated where appropriate. An introduction to microbiology is also included. 3 class hours per week.

SC5011 Energy, Environment and Our Future: A 1-semester course; 3 credit hours. Human population and associated energy demands have increased in the last century. This course examines the impact of this development from the points of view of food, technology and urbanization. The study of the progressive deterioration of human balance with the rest of nature shows the way psychological attitudes have to change. This course questions whether the prevailing attitudes and ever increasing energy demands can continue without destroying the delicate ecological balance that has taken so long to evolve. 3 class hours per week.

SC5514 Plants and Civilization: A 1-semester course; 3 credit hours. Dependence of the human race on plants and plant products. How specific plants produce the food, fuel, beverages, and medicinal products, and the resultant impact on the development of civilization. 3 class hours per week.

SC5515 Fundamentals of Science: A 1-semester course; 3 credit hours. This course is designed for students in the Respiratory Therapy programs. It contains material in mathematics, physics, chemistry and microbiology that is necessary for a basic

understanding of the sciences pertaining to Respiratory Therapy. 3 class hours per week.

Prerequisite: Enrollment in Respiratory Therapy Program or permission of instructor.

SC5516 Introduction to Cancer and Management of the Cancer Patient: A 1-semester course; 2 credit hours. This course will cover cancer diagnosis and treatment. It will address some of the problems related to the cancer patient: socio-economic, medical, psychological and familial. It includes classification of tumors according to tissue of origin and the evolution of various staging systems. 2 class hours per week.

Prerequisite: Medical Terminology I and Anatomy & Physiology I must be taken prior to or simultaneously with this course.

Shorthand/Dictation/Transcription

SH6611 ABC Shorthand: A 1-semester course; 3 credit hours. ABC Shorthand is an alphabetic system of shorthand which gives students entry level skills for vocational purposes or the ability to take shorthand for personal or professional use. The course includes the forty rules of the system, brief forms, high frequency words, and dictation of business letters. 2 class hours and 2 lab hours per week.

SH6621 Principles of Shorthand: A 1-semester course; 3 credit hours. Gregg shorthand principles, including the shorthand alphabet, brief forms, phrasing, and other abbreviating devices. Development of the ability to take dictation on practiced material at progressively higher levels. Study of the non-shorthand elements of spelling and punctuation. 3 class hours per week.

SH6622 Intermediate Shorthand: A 1-semester course; 3 credit hours. Reinforcement of shorthand principles, development of ability to take new matter dictation at progressively higher levels, and procedures and methods for handling simple, office-style dictation problems. 3 class hours per week.

Prerequisite: SH6621 or equivalent.

SH6671 Shorthand Dictation & Transcription: A 1-semester course; 3 credit

hours. Development of ability to take dictation at progressively higher levels. Emphasis is placed on the mechanics of English including spelling and punctuation and the growth of effective transcribing techniques. 3 class hours per week.

Prerequisite: SH6622 & TW6622 or equivalent.

Sociology

SO3321 Introduction to Sociology: A 1-semester course; 3 credit hours. This course is designed to provide the student with an understanding of 1) concepts basic to sociology; 2) the impact of social forces on human behavior; 3) modes of social interaction; and 4) relevance of sociology for the student as a member of the human community. 3 class hours per week.

SO3324 Cultural Anthropology: A 1-semester course; 3 credit hours. An introduction to the diversity of contemporary human cultures. A cross-cultural perspective will be used to examine the subsistence patterns, marriage, kinship, political organization, religion and philosophy of selected non-European peoples. Theoretical frameworks to be considered will include evolutionary, cultural materialist, functionalist, personality and culture. 3 class hours per week.

SO3331 Marriage and the Family: A 1-semester course; 3 credit hours. The main focus of this course is the understanding of the relationship between family forms and social structure. This will involve an investigation of human sexuality, interpersonal communication, relationships, marriage, divorce, and alternative forms of family living. 3 class hours per week.

SO3333 Contemporary Social Problems: A 1-semester course; 3 credit hours. An analysis of the relationship between social structure and social problems in contemporary society. The course will emphasize: 1) the interdependence of all social problems; 2) the interaction between our institutional forms and social problems; and 3) the relationship between values and social action. 3 class hours per week.

SO3343 Juvenile Delinquency: A 1-semester course; 3 credit hours. This course will concern itself with an in-depth study of juvenile delinquency; its various causes, the sociological impact on the community, as well as present rehabilitative efforts which attempt to cope with this serious contemporary problem. May not be offered every semester. 3 class hours per week. **Prerequisite:** SO3321 or permission of the instructor.

SO3353 Introduction to Criminology: A 1-semester course; 3 credit hours. A survey of the patterns and evolution of adult criminal behavior and juvenile delinquency analyzed in terms of various theories of such behavior; types of crime, and the administration of criminal justice. 3 class hours per week.

SO3354 Death and Dying: A 1-semester course; 3 credit hours. America is a death denying society. The hidden aspect of this universal experience has caused untold misery. Openness, honesty, sharing and personal consciousness-raising will enable people to lead richer, happier, more productive lives. Health worker, minister, teachers, police, parents, among others, can benefit from this course. Topics covered include medical definition, historic aspects, children and death, suicide, grief, rituals, and personal acceptance of death. 3 class hours per week.

SO3355 Introduction to Social Services: A 1-semester course; 3 credit hours. An introduction to social work and human service systems in America. An overview of historical and present characteristics and clinical issues in organizations such as family and child welfare agencies, youth and correctional agencies, child care centers, mental health institutions, and other agencies and services concerned with casework, group work and community organization work. Emphasis will be placed on knowledge of agencies and services, as well as worker's role and function in meeting the needs of the client population. 3 class hours per week.

SO3356 Psychosocial Aspects of Aging: A 1-semester course; 3 credit hours. Analysis of current social gerontological literature on theory and research pertaining to biological, psychological, and sociological variables over

the adult life span. Age concern in later life, special concerns such as racism, alcoholism, sexuality, retirement, finances, recreation and leisure will be studied. The course will cover the changes in behavior that occur from adulthood to old age with emphasis on those variables which contribute to successful aging. The role of family and community, especially the neighborhood support system will be examined in terms of their interaction with the aging individual. 3 class hours per week.

SO3358 Women and Society: A 1-semester course; 3 credit hours. An analysis of the effect of social structure on the position of women in society. Historical, cross-cultural and biological perspectives will be used to explore attitudes toward women and their economic and political positions. Women's issues will be viewed as they parallel general human issues. The course will encourage discussion of the possible effects of women's equality on the social structure of the future. 3 class hours per week.

SO3359 Work and Society: A 1-semester course; 3 credit hours. This course examines the institution of work as a growing source of conflicts between the desire for a fulfilling job and the need for productivity, between work and family, between people and machines, between unemployment and inflation. Some of the issues discussed are the changing meaning and nature of work, the role of government in shaping jobs and workplaces, the economic and social effects of increasing numbers of working women. The values and assumptions underlying the personal and public choices we make in resolving these issues will also be discussed. 3 class hours per week.

Spanish

SP4401/SP4402 Introductory Spanish I & II: A 2-semester course; 3 credit hours per semester. For students who have not completed two years of high school Spanish or the equivalent as determined by the department. Audio-lingual emphasis. Introduction to grammatical patterns, reading and writing. 3 class hours per week.

SP4421 Introductory Conversational Spanish I: A 1-semester course; 3 credit hours. Designed primarily for personnel in public service who need basic communication skills when dealing with speakers of Spanish only. Question/answer format; basic dialogue, pattern practices, specialized vocabularies to meet individual needs. 3 class hours per week.

SP4422 Introductory Conversational Spanish II: A 1-semester course; 3 credit hours. Pattern practice, dialogues, question/answer format; specialized vocabularies to meet individual needs. 3 class hours per week. **Prerequisite:** SP4421 or equivalent.

SP4423 Conversational Spanish III: A 1-semester course; 3 credit hours. This course is open to students who have completed a college-level introductory Spanish course. Question/answer format; dialogues; specialized vocabularies to meet specific needs; specialized writing skills introduced. Conducted in Spanish. 3 class hours per week. **Prerequisite:** SP4422 or equivalent.

SP4424 Conversational Spanish IV: A 1-semester course; 3 credit hours. Question/answer format; specialized writing skills; specialized vocabularies to meet specific needs. Conducted in Spanish. 3 class hours per week. **Prerequisite:** SP4423 or equivalent.

SP4451/SP4452 Intermediate Spanish I & II: A 2-semester course; 3 credit hours per semester. For students who have completed two or more years of high school Spanish or the equivalent as determined by the department, or who have completed SP4401 and SP4402. A continued study of language skills, emphasizing the development of reading ability. 3 class hours per week.

SP4461/SP4462 Review and Progress in Spanish I and II: A 2-semester course; 3 credit hours per semester. A review of basic structure, verbs, and related essentials. Intended for native speakers, Hispanic students, majors and non-majors. Strengthens skills in speaking, reading, and writing. Vocabulary and pronunciation improvement; short compositions. Reading and discussion of selected short stories, poetry and folklore. Course tailored to meet individual needs. 3

class hours per week. **Prerequisite:** SP4401 and SP4402 or permission of the instructor.

Technology

TE1000 Blueprint Reading I: A 1-semester course; 3 credit hours. This course provides basic training with practical applications in reading and interpreting prints. Emphasis is on visualization, the process of forming a mental picture of an object by interpreting lines and views from a print. 3 class hours per week.

TE1003 Blueprint Reading II: A 1-semester course; 3 credit hours. This course covers advanced concepts including standard views, sections, dimensions, symbols, drawing formats, numbering systems, change control and print control systems. 3 class hours per week. **Prerequisite:** Blueprint Reading I.

TE1010 Machining and Tooling Technology I: A 1-semester course; 3 credit hours. This lecture/laboratory course reviews basic machine shop techniques and covers, in depth, the setup and operation of lathes, drill presses and milling machines. Topics include cutting tool geometry, selection of cutting speeds and feeds, precision measuring tools, and inspection techniques. 2 class hours and 2 laboratory hours per week.

TE1011 Machining and Tooling Technology II: A 1-semester course; 3 credit hours. This lecture/lab class reviews advanced machine shop techniques covering, in depth, precision surface grinding, vertical milling, heat treating, hardness testing, precision inspection techniques, and introduction to electrical discharge machines. 2 class hours and 2 lab hours per week. **Prerequisites:** Machining and Tooling Technology I; Shop Geometry & Trigonometry concurrently.

TE1012 Machine Tool Processes: A 1-semester course; 3 credit hours. This course provides the student with the capability to write manufacturing process sheets. A study is made of the capabilities, setups, and operations performed on lathes, drill presses, surface grinders, horizontal and vertical milling machines. An introduction to turret lathes, production milling and grinding

techniques is presented. 3 class hours per week. **Prerequisite:** Computer Numerical Control.

TE1015 Geometric Tolerancing: A 1-semester course; 3 credit hours. This course provides students with practical knowledge of geometric tolerancing techniques used in engineering, production and quality control. Topics include rationale for use and basic characteristics and symbols; tolerances of form and position; true position of non-cylindrical features and coaxial features; true position extended principles, datums, concentricity, and symmetry. 3 class hours per week. **Prerequisite:** Machining & Tooling Technology II and Blueprint Reading II.

TE1019 Computer Numerical Control (CNC): A 1-semester course; 3 credit hours. This lecture/laboratory course focuses on computer programming of numeric systems in the machine shop. Numeric control installation operation and manual part programming will be reviewed prior to introduction to the major programming languages, APT and COMPACT II. Topics include geometry statements, how to write a part program, and part programming capabilities for canned cycles, subroutines, cutter compensation, and G92 code for preload of registers. 2 class hours and 3 laboratory hours per week. **Prerequisite:** Numerical Control.

TE1020 Numerical Control: A 1-semester course; 3 credit hours. This course provides an introduction to the controlling of systems by the direct insertion of numerical data. Topics will include system part fundamental coding, basis for numeric manual point-to-point and continuous path programs. Computer-assisted programs (CNC) will be briefly introduced. **Prerequisite (may be taken concurrently):** Machining and Tooling Technology II.

TE1025 Measurements and Production Quality: A 1-semester course; 3 credit hours. This lecture/laboratory course covers the study and application to shop production and quality of precision dimensional measuring instruments, including direct and indirect hand measuring tools, electronic gauges, surface measurement and optical comparators. 2 class hours and 2 laboratory hours per week.

Prerequisite: Shop Geometry & Trigonometry.

Theatre

TH7765 Introduction to Theatre: A 1-semester course; 3 credit hours. This course has two general goals. First, to introduce the contemporary theatrical world: playwright, producer, theatre structure, director, actor, technicians and designers. Second, to apply knowledge in a practical experience situation. 3 class hours per week.

TH7768 Scene Study: A 1-semester course; 3 credit hours. Performance class offering in-depth scene and monologue study emphasizing character development and script analysis. Various acting techniques will be discussed and utilized. Course objectives will center on the ability of the students to overcome fears and barriers, the development of confidence in public, and the ability to make creative choices. 3 class hours per week.

TH7769 Acting: A 1-semester course; 3 credit hours. A lecture-performance course designed to familiarize the student with basic acting techniques. Discussion and exercises explore the vocal, bodily, and psychological aspects of acting. Script analysis, characterization, and performance. 3 class hours per week.

TH7775 Fundamentals of Play Production: Directing: A 1-semester course; 3 credit hours. The methods and techniques of directing. Adjunct activities – lighting, design, costume, makeup – are included. After seminars and scenework, students direct short plays. 3 class hours per week.

TH7785 Mime: A 1-semester course; 3 credit hours. The mime (or pantomime) expresses ideas and concepts using the body as primary communication. Toward this end, classical mime technique is incorporated with exercises from other movement disciplines. Readings and attendance at professional mime shows add background knowledge which enhances student performance. 3 class hours per week.

TH7789 Playwriting: A 1-semester course; 3 credit hours. Discussion concerning plot, character and dialogue leads to student written

scenes and plays, which are evaluated by the class and may be staged in workshop fashion. 3 class hours per week.

TH7795 History of Theatre: A 1-semester course; 3 credit hours. A history of Western theatre from Greek to modern times. The focus of this course is on theatre architecture, production methods, acting styles and dramatic writing style in each period discussed. 3 class hours per week.

TH7799 Rehearsal and Performance: A 1-semester course; 3 credit hours. Students in this course constitute an acting ensemble which produces plays. Historical, structural and character analysis in both pre-rehearsal and rehearsal. Public performances. Critiques of performances. 3 class hours per week.

Prerequisite: Audition and written permission of instructor.

Travel and Tourism

TL1001 Introduction to the Travel and Tourism Industry: A 1-semester course; 3 credit hours. This course is designed as an introduction to travel agency operations, policies and procedures. Emphasis will be placed on domestic and international air travel; cruising; railroads, car rentals and charters; hotels; tours and itineraries. Also covered are selling the travel product to the individual, travel agencies and marketing, automation, and travel agency finances. 3 class hours per week.

TL1010 Reservation and Ticketing: A 1-semester course; 3 credit hours. In this course, students will have the opportunity to develop hands on reservation and ticketing skills on computer terminals. Topics covered include building and Passenger Name Record (PNR); PNR modifications; fare quotes and itinerary pricing; automated airline ticket, boarding pass and invoice preparation; auxiliary reservation services such as car rentals, hotels and cruises; queue system; and client and corporate profiles. 2 class hours and 2 lab hours per week.

TL1011 Travel and Tourism Marketing Techniques: A 1-semester course; 3 credit hours. In this course, marketing techniques

will be studied as they apply to the travel and tourism business. The marketing aspects of the travel industry will include topics such as elements of the marketing mix; product versus service; locating and researching prospects; travel trends; and commercial accounts. Also covered will be the role of advertising; human behavior in advertising; psychological appeals; types of advertising; and ethical and legal considerations. Constructing the advertising message and the design of print advertising will be studied as applied to different types of media, as well as the planning of publicity and promotional techniques. 3 class hours per week.

TL1012 Legal Aspects of Travel Agency Operations: A 1-semester course; 3 credit hours. This course will cover the legal ramifications, scope of authority and responsibilities of the parties involved in travel agency operations. Topics include insurance coverage, contracts, functions of the Travel Agency Commissioner, legal aspects of travel agency finances, legal restraints on advertisement and the establishment of a travel agency. The course will include case studies as well as sample contracts and forms such as disclaimers, retainer contracts, promissory notes, demand notes, publicity releases and employment contracts. 3 class hours per week.

Typewriting

TW6610 Keyboarding I: A 1-semester course; 1 credit hour. This course is designed to teach keyboarding skills to students entering a variety of fields such as computer science, data processing, accounting or any occupation that utilizes a keyboard similar to a typewriter to input information. 2 class hours per week.

TW6611 Keyboarding II: A 1-semester course; 1 credit hour. This course continues the development of basic keyboarding skills started in Keyboarding I, with emphasis on improving speed and accuracy on typewriters, computer terminals, and other automated equipment. This course will prepare students for the growing variety of jobs which require

keyboarding skills to input information accurately and quickly. 2 class hours per week. **Prerequisite:** Keyboarding I or equivalent.

TW6621 Typewriting I: A 1-semester course; 3 credit hours. Foundation course to vocational typewriting. Development of correct basic typewriting skill. Introduction to short business and personal letters, tables, reports and other typewriting applications. 3 class hours per week.

TW6622 Typewriting II: A 1-semester course; 3 credit hours. Development of requisite typing skills, experience and knowledge expected of a typist new to office employment. Development of ability to make basic editorial corrections and to type manuscripts, business forms, tabulations and correspondence. 3 class hours per week. **Prerequisite:** TW6621 or equivalent.

TW6631 Typewriting III: A 1-semester course; 3 credit hours. Extension of typewriting skills to higher performance levels. Emphasis on typing unfamiliar and unarranged kinds of materials. Statistical typing. Production typewriting. 3 class hours per week. **Prerequisite:** TW6622 or equivalent.

TW6632 Typewriting IV: This course will familiarize the student with state-of-the-art electronic typewriters with visual display upgrade. Course content will stress the completion of common business correspondence, such as advanced letters, tables, and manuscripts, as typed in automated fashion with the integration of the special features of the electronic typewriters (current equipment used; Panasonic KX-708). 3 class hours and 1 lab hour per week. **Prerequisite:** Completion of Typewriting III with a grade of C or better.

Directories

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John J. Linnehan, Chairman

Director, C. Frank Linnehan & Son Funeral Service, Haverhill

Carol Abbott, Director

Women's Crisis Center of Newburyport

Guilmo Barrio, Executive Director

Lawrence Human Rights Commission

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Bay Bank Merrimack Valley, Andover

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Knight Tool Company, Haverhill

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Employment & Training Consultant

Merrimack Valley Alliance of Business, Lawrence

Ronald A. Ferris, President, Local 1365

Communication Workers of America, North Andover

Joseph Gangi, Business Manager

Carpenters Local III, Lawrence

Ronald Guittarr, Manager, Administration

Raytheon-Lowell Plant, Lowell

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AID Temporary Services, Lawrence

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Roger H. Muir, Regional Director

Division of Employment Security

Massachusetts State Employment Service, Lawrence

Frank Orlandella, Human Resources Manager

Hewlett Packard Company, Andover

Maria Quintana, Assistant Vice President

Arlington Trust Company, Lawrence

Carlos Rosello, Principal

Lawrence High School

Thomas Sager, Director

Hale Hospital, Haverhill

George Sheehan, Director of Development

Region III-Department of Commerce, Lowell

Daniel Tuccolo, Union Representative, Local 1365

Communication Workers of America, North Andover

Peter Vanier, Director

Department of Training & Development, City of Lawrence

Robert Wysocki, Manager, Product Engineering

AT&T Technologies, North Andover

Adjunct Faculty

Edward Aileo, R.R.T., Respiratory Therapy
Warren Archambault, Officer, Criminal Justice
Shae A. Baddour, Sergeant, Criminal Justice
Francis J. Baggett, Criminal Justice
Thomas Bastek, Lieutenant, R.R.T., Respiratory Therapy
James Bateman, Lieutenant, Criminal Justice
Peter Betit, R.R.T., Respiratory Therapy
Dr. Eugene Beliveau, Dental Assistant
Dina Bock, Criminal Justice
Dr. William Boisselle, Dental Assistant
Carlton Boucher, R.R.T., Respiratory Therapy
Lynne Bower, R.R.T., Respiratory Therapy
Howard J. Camuso, Supervisor, Criminal Justice
Charles Carlin, R.R.T., Respiratory Therapy
Dr. Stephen Chadwick, Dental Assistant
Dr. Santo Cataudella, Dental Assistant
Matty Cinquegrana, R.T.R., Radiologic Technology
James P. Cleary, III, Clerk/Magistrate, Criminal Justice
Dr. A. R. Contarino, Dental Assistant
Paul Courtemanche, Class Officer, Criminal Justice
Norman Crawford, Chief, Criminal Justice
Michael Cronin, Chief, Criminal Justice
Paul DeJoie, Director, Criminal Justice
Donald DeSantis, Chief, Criminal Justice
Catherine Dolan, R.R.T., Respiratory Therapy
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Beth Doyle, R.T.R., Radiologic Technology
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William R. Foster, Sergeant, Criminal Justice
Dr. Joseph Gemmell, Dental Assistant
Alan Gould, Sergeant, Criminal Justice
John A. Harrington, Director of Security, Criminal Justice
James Johnson, Chief, Criminal Justice
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Dr. Michael Kalil, Dental Assistant
Dr. Rudolph Lantelme, Dental Assistant
Dr. Thomas Leonard, Dental Assistant
Kenneth Lynch, Captain, Criminal Justice
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Bruce MacDougall, Captain, Criminal Justice
Dr. Peter Manis, Dental Assistant
Terrence M. Marks, Superintendent, Criminal Justice
Mary McCabe, Criminal Justice
Thomas McNiff, Captain, Criminal Justice
Rosemary Melia, R.T.R., Radiologic Technology
Helen Merlin, R.R.T., Respiratory Therapy

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 Dr. Sharon Moughan, Dental Assistant
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 Mary Lou Myrer, R.N., Respiratory Therapy
 Bernard Nalley, Deputy Chief, Criminal Justice
 Thomas Nastasia, Captain, Criminal Justice
 Francis O'Connor, City Marshall, Criminal Justice
 Edwin Oliveira, Chief, Criminal Justice
 Dr. Vincent Paolino, Dental Assistant
 Michael Pare, R.R.T., Respiratory Therapy
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 Dr. John Rizza, Dental Assistant
 James Ross, Commander, Criminal Justice
 Joseph Ryan, Lieutenant, Criminal Justice
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 Dr. Anthony Sciuto, Dental Assistant
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 Dr. Neil Twomey, Dental Assistant
 Dr. Robert Urbon, Dental Assistant
 Douglas Warren, Chief, Criminal Justice
 Dr. Stephen Weisner, Dental Assistant
 Paul Woods, R.T.R., Radiologic Technology
 William Wrenn, Deputy Chief, Criminal Justice
 Alan C. Wyatt, Respiratory Therapy
 Harry Yeo, Officer, Criminal Justice
 Drew Zabriskie, Criminal Justice

Visiting Professors

Maurice Bova, Early Childhood Education
 Dr. Donald Gauthier, Nursing
 John Jascoll, Technical Representative, Radiologic Technology
 Dr. Gary Kraus, Nursing
 Paul Murphy, Attorney-at-Law, Criminal Justice
 Jim Schaefer, Technical Representative, Radiologic Technology
 John P. Shyavitz, Attorney-at-Law, Nursing

Program Advisory Committees

Business Division

Richard Bye, Employment Supervisor, Avco Corp., Wilmington
Carol Coombs, Operations Supervisor, Human Resource Dept., Avco Corp., Wilmington
Debra Forlizzi, Wang Laboratories, Lowell
Marilyn Gould, Human Resource Rep., Honeywell Information Systems, Inc., Lawrence
Jacqueline Hall, Human Resource Mgr., Research & Development Div., Wang Labs
Charles Johnston, Director of Sales, Uniglobe Whittier Travel, Bradford
Rena Laviolette, Kelly Services, Inc., Boston
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Bernie Willett, Sales Promotion Mgr., American Airlines, Logan Int'l Airport, East Boston

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Santo Icolosi, Municipal City Engineer, Lawrence

Computer Technology

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Jeff Kingston, Finelle Industries, Lawrence
Pat Lynch, Bon Secours Hospital, Methuen
David Messina, Wang Laboratories, Tewksbury
James Smyth, Educational Software, North Andover

Cooperative Education

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Kathy Brown, Alumni, Lawrence Eagle Tribune, North Andover
Mark Claybourn, College Relations, Sherwin-Williams, Medford
Jean Fletcher, Wang Laboratories, Lawrence
Paul Giannino, Ass't Manager, Somerville Lumber Co., Pelham, NH
Rosanne Kean, Office Specialists, Burlington
Kevin Keleher, Digital Equipment Co., Salem, NH
Paul Madison, Production Mgr., Adams Russell, Antenna & Microwave Division, Amesbury
Mike Moore, Consultant & Designer, Inc., Plaistow, NH
Pat Parker, Arlington Trust Co., Lawrence
Don Ruhl, Chamber of Commerce, Haverhill,
Sheila Stabil, Arlington Trust Co., Lawrence
Ray Viens, Massachusetts Div. of Employment Security, Haverhill
Don Watts, Radar Technology, Haverhill
Colin Woodfall, McDonald's, c/o Colley-McCoy Co., Windham, NH

Criminal Justice

Police:

Bruce MacDougal, Chief, Police Dept., Methuen
Francis E. O'Connor, City Marshall, City of Newburyport

Courts:

Arthur Delaney, Chief Probation Officer, Newburyport Court

Corrections:

Paul DeJole, Director of Planning & Human Services, Lawrence House of Correction
Peter Russell, Deputy Sup't of Corrections, Essex County House of Corrections, Lawrence

Security:

Frank Baggett, Security Manager, Avco Corporation, Wilmington

Edward Chapman, Manager, Corporate Security, Wang Labs, Lowell
John A. Harrington, Manager, Corporate Security, Wang Labs, Lowell

Educators:

Edward Croatti, Assistant Dean, College of Criminal Justice, Northeastern Univ., Boston
Dr. Joseph Lipchitz, Coordinator, Dept. of Law and Justice, University of Lowell

Dental Assistant Program

Dr. Eugene Beliveau, Generalist, North Andover
Ruth Ann Croce, CDA, Methuen
Dr. John Doykos, Pediatric Dentist, Lawrence
Trudy Gazda, Class of 1988, Salem, NH
Dr. Joseph Gemmell, Generalist, Andover
Dr. Stephen Halem, Periodontist, Dentists Collaborative, Methuen
Judith Harvey, Director of Admissions, Forsyth School for Dental Hygienists, Boston, MA
Dr. Joseph Kalil, Lawrence, MA
Dr. Thomas Lamson, President, Merrimack Valley District Dental Society, Andover
Dr. Rudolph Lantelme, Endodontist, North Andover
Sheila Long, CDA, North Andover
Dr. Philip Minichiello, Haverhill
Dr. John Rizza, Lawrence
Dr. Howard Smith, Lawrence

Early Childhood Education

Maureen Daley, Newburyport Montessori School
Martha Eaton, Director, S.E.E.M., E. Ethel Little School, North Reading
Linnea Gershenberg, Early Childhood Coordinator, Andover
Mimi Gordon, Ass't Coordinator, Day Care Services, Office for Children-Region III, Peabody
Charlotte Gulezian, Director, Merrimack Child Care Center, Haverhill
Stephani Herman, Ass't Director, Greater Lawrence Community Action Child Care
Alice Juchnevics, Executive Director, Little Red Schoolhouse, Tewksbury
Susan McLaughlin, Director, Haverhill Day Care, Bradford
Maureen Mulcahy, Project Director, G. Lawrence Community Council, Headstart Program
Irene Rochwarg, Director, ECLC Learning Center, North Andover
Martha Sperandia, Child Care Circuit, Lawrence
Sylvia Stephenson, Family Cooperative Preschool, North Andover
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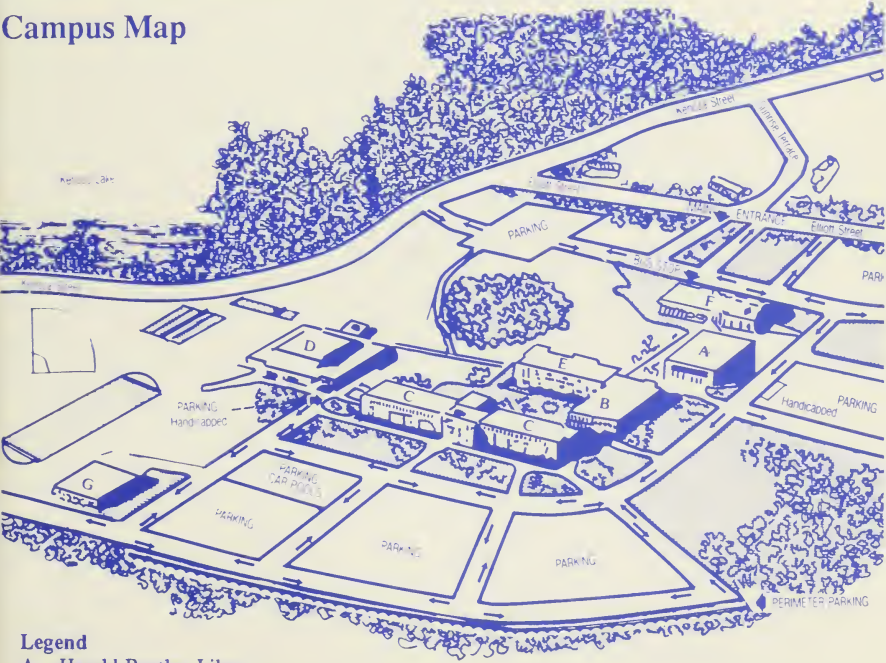
Directions

The main campus is located at Exit 52 off Route 495 on Elliott Way in Haverhill. Major roadways connecting with Route 495 are Route 93 from the south and Route 95 from the north.

The Lawrence campus holds classes at Central Catholic High School, 300 Hampshire Street, at the Lawrence Public Library, 51 Lawrence Street and at other Lawrence sites.

Extension campuses are located at Greater Lawrence Technical School, 57 River Road, Andover; Dracut High School, 1540 Lakeview Avenue; Newburyport High School, 241 High Street and Reading High School, 62 Oakland Road.

Campus Map



- Legend**
- A - Harold Bentley Library
 - B - Applied Science Building
 - C - Liberal Arts Building
 - D - Gymnasium
 - E - Science Building
 - F - Student Center
 - G - Maintenance

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